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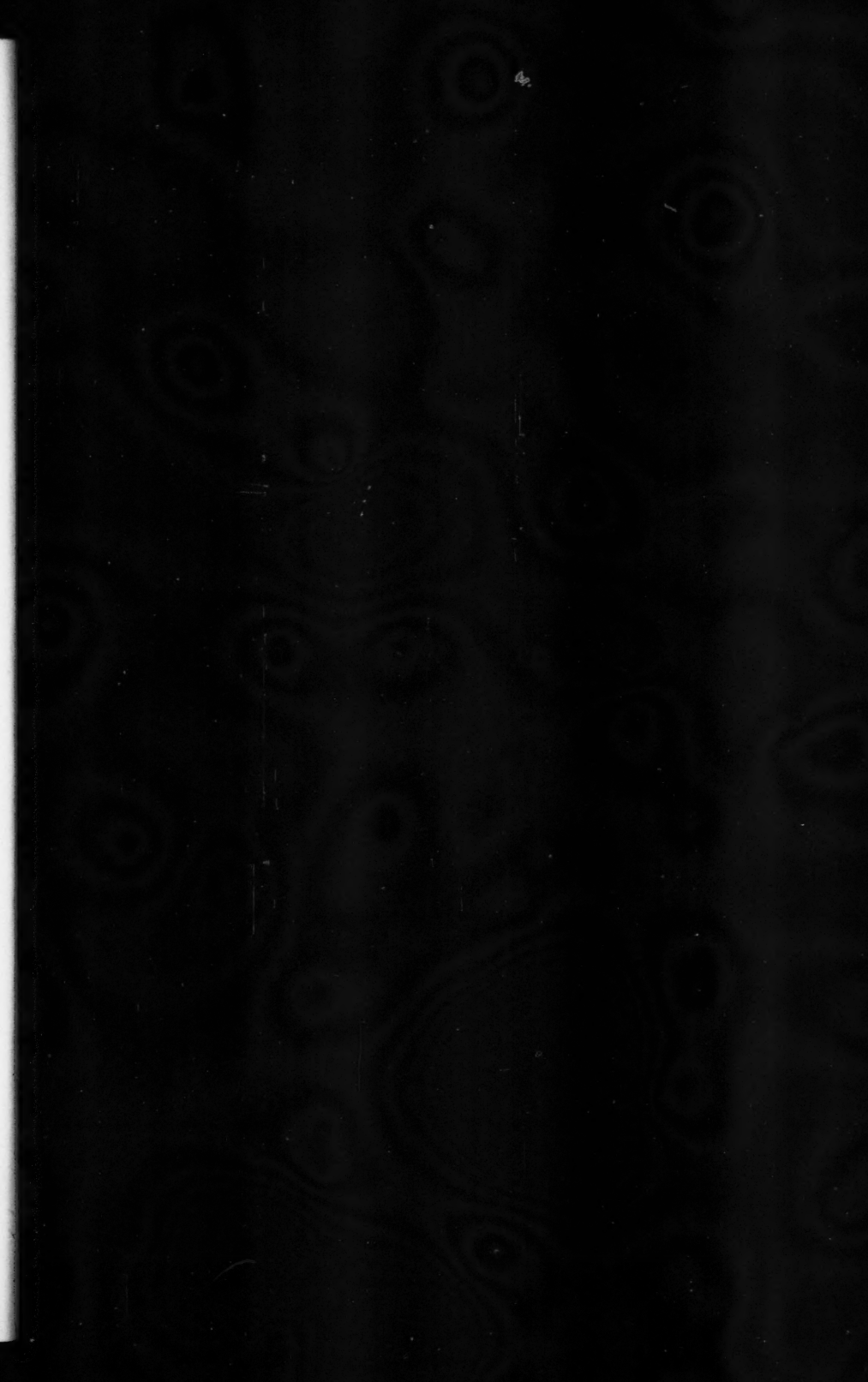
EDW. W. WHEELER

CAMBRIDGE, MASS.

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VOL. 51. No. 1. — AUGUST, 1915.

CONTRIBUTIONS FROM THE CRYPTOGAMIC LABORATORIES
OF HARVARD UNIVERSITY. No. LXXVII.



NEW INDO-MALAYAN LABOULBENIALES.

BY ROLAND THAXTER.

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(Continued from page 3 of Cover.)

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CONTRIBUTIONS FROM THE CRYPTO GAMIC LABORATORIES
OF HARVARD UNIVERSITY. No. LXXVII.

NEW INDO-MALAYAN LABOULBENIALES.

BY ROLAND THAXTER.

Received May 24, 1915.

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THE new forms which are described in the present paper have been obtained from several sources. A portion of the Javan material was found on insects purchased from the late M. Rouyer, and a small number were also obtained from certain hosts kindly collected for me by Dr. W. P. Thompson. All the forms from Samarang, which include a great majority of the Javan species, were partly found on miscellaneous insects which Mr. E. Jacobson was so kind as to have his assistant collect for me, while the infested crickets were discovered by Mr. Jacobson himself, who is thus the first to have observed that hosts of this nature were bearers of Laboulbeniales, and to whom I am especially indebted for this noteworthy addition to our knowledge of the group. Through the very great kindness of Mr. T. Petch of the Peradeniya Gardens, to whom I am under deep obligations for his trouble in personally collecting miscellaneous insects which he has sent me for examination, our knowledge of the Ceylon forms has been very materially increased. A few specimens have also been obtained from the Museum of Comparative Zoölogy in Cambridge. I am further indebted for determinations of Staphilinidae to Dr. Max Bernhauer; of the forficulids to Dr. Malcolm Burr; of the other Orthoptera to Mr. A. N. Caudell, and for certain generic determinations to Mr. Schwartz and Mr. Barber of the National Museum. To all these gentlemen I desire to express my obligations for the trouble which they have taken in my behalf.

The new and very striking forms on *Gryllus* and *Gryllotalpa* collected by Mr. Jacobson, have a special interest since not only are these new types of hosts for the Laboulbeniales, but the species which infest them are unusually interesting and peculiar. The two forms on *Gryllus*, which I have placed in the genus *Laboulbenia*, are noteworthy in that they combine the characters of this genus and of *Ceraimomyces* in such a way as to definitely confirm my previously expressed opinion

that the two genera might have to be united (see These Proceedings, L, p. 45). The genus *Ceraimyces* was originally based on the dipterophilous *C. Dahlii* from New Guinea, in which not only are cells III-V replaced by a single cell but the appendage has the appearance of being single, that is of arising from one basal cell. In this species, also, a well developed penetrating rhizoid is developed. What appears to be the basal cell in this species should probably be regarded, however, as the insertion-cell; the basal cells of the two branches which arise from it, representing the basal cells of the typical outer and inner appendage in *Laboulbenia*. A sufficient number of forms have now accumulated on Diptera and Coleoptera which, taken in connection with the two forms on *Gryllus* described below, make it evident that *Ceraimyces* had best be discarded. The forms which may be included in this general section represent a tendency toward the development of a more simple receptacle, just as the aquatic species, and some others, show a tendency toward greater complication than is present in the type-forms. In one of the two closely allied species described below on *Gryllus*, the black insertion-cell bears but a single basal appendage-cell, while cell V is present and is proliferous in a fashion resembling that seen in *Laboulbenia proliferans*. In the second species, which is so closely allied that it might almost be regarded as a variety only, the structure is exactly that of a typical *Laboulbenia*, although in both the host is penetrated by a well developed rhizoid. The species heretofore described under *Ceraimyces* may therefore best be transferred to *Laboulbenia* which will therefore include the following forms: ***Laboulbenia Dahlii*, *L. Selenae*, *L. Epitricis*, *L. obesa*, *L. miniscula*, *L. dislocata*, *L. Trinidadensis*, *L. Chaetocnema*, and *L. Nisotrae*.**

***Dimeromyces falcatus* nov. sp.**

Male individual. Pale straw-yellow or nearly hyaline, consisting of usually five superposed cells (four to eight) terminating in a small unicellular appendage bluntly pointed, slightly tapering, about three times longer than broad; the basal cell running into the large long somewhat irregular foot, somewhat bent, about twice as long as broad, narrower above the foot, with a broad contrasting distal blackish brown band; the cells above usually successively somewhat smaller or subequal, all or most bearing single antheridia more or less definitely superposed, usually three to five in number. Antheridia long slender colorless; the stalk-cell sometimes even longer than the venter and

neck; the venter without basal cells and consisting of two antheridial cells which discharge by rather long canals into the cavity of the neck, which is straight or curved and about as long as the venter. Total length, including terminal appendage-cell ($12-15\ \mu$) and foot ($25\ \mu$), $80-94 \times 8\ \mu$. Antheridia, including stalk-cell, about $40 \times 5\ \mu$.

Female individual. Amber-brown, falcate and often slightly sigmoid, the cells thick-walled. Receptacle not distinguished from the primary appendage with which it is continuous; the axis consisting of usually twenty-five superposed cells, six of which belong to the receptacle proper; a basal cell considerably longer than broad, hyaline below a broad partly diagonal blackish band; the other five cells very thick-walled with small rounded lumen, especially the lower four, the lowest of which produces a short simple rather closely septate pale sterile appendage which, bending beside the base of the perithecium above it, is more or less appressed against the receptacle and extends just above the base of the primary appendage, its origin becoming obscured by displacement, so that it appears to arise from the basal cell of the receptacle; three of the cells above it usually producing perithecia. Primary appendage simple, paler distally and tapering to a blunt termination, the cells squarish or slightly longer than broad. Perithecia two to normally three, arising from successive cells in a slightly oblique series, almost sessile, erect; the very short stalk-portion bent abruptly upward; the main body asymmetrical, slightly broader distally, the inner margin convex, the outer concave, tapering rather abruptly to the tip which is subtended by a slight elevation on the inner side; the rounded apex of its slightly curved distal portion bent outward. Perithecia $85-100 \times 20-24\ \mu$. Spores, female, $18 \times 3\ \mu$. Total length to tip of primary appendage $350-390\ \mu$. Receptacle $80 \times 20\ \mu$, face view $\times 30\ \mu$. Secondary appendage $45-70\ \mu$.

On the antennae of *Gryllus mitratus* Burm. Samarang, Java.

The many peculiarities of this species, which grows appressed on the antennae of its host, need hardly be pointed out. The male individual is of special interest, since its antheridium is of a type more simple than is usual in this genus; the antheridial cells, of which there appear to be never more than two, cutting off no basal cell, so that there are present only a long stalk cell, two antheridial cells and the neck for discharge of sperm-cells. The sixth cell of the receptacle in the female individual appears to be the basal cell of the primary appendage, which in other species is often separated from the appendage by a darkened septum. The single secondary appendage is so small and inconspicuous that it may be readily overlooked.

Dimeromyces brachiatus nov. sp.

Male individual. Receptacle hyaline, subtriangular above its stalk-like base, the lumen of which is nearly or completely obliterated; consisting of from five to seven cells obliquely superposed, those between the basal and terminal cells much flattened and each associated with a corresponding simple secondary appendage: the terminal cell larger, somewhat rounded distally, bearing the primary appendage distally and the single antheridium laterally. Primary appendage simple, rather short, hardly tapering, with blunt rounded apex, and consisting of a small almost square or slightly flattened basal cell, followed by one to two flattened yellowish brown cells distinguished by dark septa; the rest of the appendage a single elongate cell. Secondary appendages superposed in a single series, somewhat divergent and mostly in contact throughout; similar to the primary appendage, the basal cell large, the flattened suffused cells one to three in number. Antheridium solitary, arising just above the base of the uppermost secondary appendage, its basal or stalk-cell somewhat larger than that of the latter, subtriangular; the venter and neck relatively short, somewhat curved; the antheridial cells about eight in number, the basal cells clearly defined, the neck rather abruptly distinguished, but rather short and strongly bent. Receptacle $46 \times 12 \mu$. Foot 18μ . Appendages $28 \times 4 \mu$. Antheridium $27 \times 9 \mu$.

Female individual. Hyaline or faintly yellowish. Receptacle similar to that of the male, consisting of eight to nine cells; the terminal one small, triangular, bearing the primary appendage terminally; the remaining cells above the basal cell bearing either secondary appendages, perithecia, or secondary appendiculate axes: the terminal cell always bearing a secondary axis laterally, the subterminal giving rise to the first perithecium and the cell next below to a secondary appendage, while the remaining cells may produce either of these structures without regularity. Primary and secondary appendages similar to those of the male, but smaller. Secondary axes greatly elongated, suberect, slightly flexed, of about the same diameter throughout, consisting of a single series of a hundred cells more or less very thick walled, arranged in vertical pairs, the successive pairs slightly displaced from right to left; the upper cell of each pair associated distally and externally with a small simple, closely appressed appendage similar in all respects to the secondary appendages of the male, and alternating right and left from successive pairs. Perithecia

originating from a basal cell like that which subtends the secondary axes; the first always arising from the subterminal cell of the receptacle, others rarely arising from cells lower down; short-clavate, subsymmetrical, broader distally, tapering to the rather small but abruptly broader apex; the lips more or less distinctly and broadly papillate. Perithecia $90-120 \times 15-20 \mu$, its basal cell $12 \times 8 \mu$. Receptacle $50-60 \times 20 \mu$; foot 20μ . Primary and secondary appendages $18-22 \times 4 \mu$. Secondary axes up to $580 \times 12 \mu$, their appendages $20-28 \times 4 \mu$.

On the elytra of *Heterophaga* sp. nov. No. 2107, Peradeniya, Ceylon.

This remarkable species is clearly separated from all other known forms by its sterile and peculiarly appendiculate secondary axes. The host, which has been kindly examined for me by Mr. Champion, is said by him to be a new species near *H. nitidula* Motsch.

Dimeromyces Petchi nov. sp.

Male individual. Receptacle hyaline, subtriangular, or sometimes more elongate, consisting of from seven to ten superposed cells; the basal cell short and triangular, or sometimes somewhat elongate; the rest obliquely superposed, flattened, each giving rise to an antheridium; the series terminated by the basal cell of the primary appendage which is subtriangular and not otherwise distinguished from the cells below. Primary appendage simple, its subbasal cell small, more or less suffused, and abruptly distinguished from the basal cell by a blackened septum, the cell above it slightly larger, but little suffused, and followed by the more elongate two-celled portion, the walls of which are distally swollen and may become more or less disorganized. Secondary appendages absent. Antheridia arising in a single row, more or less displaced by crowding, so that the series may appear double: short and stout, the stalk-cell usually slightly longer than broad, and protruding somewhat upward between the two antheridial cells from which no basal cells are separated; the venter not clearly distinguished from the stalk; the neck deeply blackened, contrasting; the efferent tube short, broad, truncate, slightly tapering, quite hyaline, diverging subterminally from the black neck at an angle of from 45° to 90° . Receptacle, including the small foot and the basal cell of the primary appendage, $45-80 \times 15-20 \mu$. Primary appendage $45 \times 5.5 \mu$ near base. Antheridia about $28 \times 9 \mu$.

Female individual. Receptacle hyaline, usually turned so that it is viewed edgewise, somewhat broader opposite the lower secondary appendage, consisting of a longer basal cell and three obliquely superposed flattened cells terminated by the undifferentiated basal cell of the primary appendage; which is small and not otherwise distinguished from the cells below it; the cell above it is distinguished by a black septum, but is not deeply suffused, and is in general like that of the male, though sometimes smaller. A single secondary appendage arising from the subbasal cell of the receptacle, similar to the primary, and separated from its basal cell by a contrasting black septum. Perithecium usually arising from the subterminal cell, of the receptacle, rarely from the terminal, above the secondary appendage; erect or bent sidewise at the base, sessile or the stalk very short, the ascus-apparatus filling the whole cavity; asymmetrical, transparent, pale smoky brown, distally rounded outward on one side below the rather abruptly distinguished tip, the base of which is more deeply suffused with blackish; forming a more or less definite transverse black band, above which it is quite hyaline except for a deep blackish suffusion just below the hyaline apex; which is rounded, slightly asymmetrical and bent. Spores $30 \times 4 \mu$. Perithecia $75 \times 20-24 \mu$. Receptacle $55-65 \times 25 \mu$. Appendages about $40-45 \times 7-8 \mu$. Total length to tip of perithecium $120-135 \mu$.

On the right inferior posterior surface of the prothorax of a small carabid allied to *Tachys*, Peradeniya, Ceylon. No. 2093b, and Samarang, Java, No. 2081c. Known also from Borneo and the Philippines.

This species is not nearly allied to any known form. The antheridia are unusually numerous and quite unique in form and appearance owing to the deeply blackened neck and abruptly bent hyaline discharge tube. I have taken the liberty of naming this very distinct form for Mr. T. Petch, whose admirable work on the fungi of Ceylon is well known to all mycologists and to whom I am indebted for all the Ceylon species herewith described.

***Dimeromyces appressus* nov. sp.**

Male individual. Receptacle lying nearly flat on the substratum, the antheridium toward the female; two-celled, the basal cell suffused, broader than long, extending outward beneath the antheridium, the base of which rests on it; subbasal cell concolorous, subtriangular,

much narrower, lateral in relation to the base of the antheridium. Basal cell of the appendage hyaline, separated from the rest of the appendage by a thin dark septum, the rest of the appendage about the same diameter throughout, two to three celled, the basal cells shorter, the tip bluntly rounded. Antheridium solitary, arising from the subbasal cell of the receptacle, its base resting almost wholly on the basal cell; its stalk-cell short and broad, distally slightly pointed; the antheridial cells four with clearly distinguished basal cells; the venter short and rather stout; the neck stout, purplish, not abruptly distinguished, relatively long and stout, curved and slightly tapering throughout. Receptacle, exclusive of foot, $10 \times 9 \mu$. Antheridium $18 \times 6 \mu$. Appendage $20-24 \mu$. Total length to tip of appendage about 30μ .

Female individual. Receptacle prostrate, its three successively larger cells flattened, somewhat obliquely superposed, not distinguished from the basal cell of the appendage; the whole, including the foot, subtriangular; the lower (outer) margin straight, the upper divergent from the foot to the upper angle of the basal cells from which it converges to the thin dark terminal septum which separates the basal cell from the rest of the primary appendage; which is two to three celled, rather stout, the lower cells short, the tip bluntly rounded. Secondary appendage solitary, arising from the subbasal cell of the receptacle; when growing on the abdomen bent abruptly upward at right angles to its axis, erect, its long basal cell sometimes rather deeply suffused, and followed by two nearly equal thin-walled purplish cells, slightly longer than broad; the rest of the appendage mostly hyaline, one to two-celled; when growing on the forceps smaller, shorter, and lying nearly parallel to the axis of the receptacle. Perithecia solitary, arising from the third cell of the receptacle, curved abruptly upward at its abruptly broadened base, erect; the stalk elongate, broader below, distally merging gradually with the faintly purplish body of the perithecium; which is hardly distinguished from it, slightly asymmetrical, its inner margin nearly straight, the outer convex; the tip not distinguished, except near the apex which is subtended externally by a more or less well defined hump or prominence; the lip-cells variably somewhat asymmetrically prominent, slightly oblique inward, that is away from the secondary appendage. Body of perithecium $45 \times 12 \mu$ (ascigerous portion), the stalk $70-80 \times 10 \mu$, at base. Spores about $28 \times 2.5 \mu$. Receptacle, including basal cell of appendage and foot, $20 \times 10 \mu$. Primary appendage, exclusive of basal cell, $12-16 \times 5 \mu$. Secondary appendage $35-45 \times 5.5 \mu$.

On the inferior surface of the abdomen near the tip and on the forceps of *Labia pilicornis* Motsch. Peradenyia, Ceylon, No. 2112.

This species is allied to *D. Labiae* and *D. minutissimus* from both of which it is distinguished by its pedicellate perithecium, as well as by other points of difference. The specimens obtained from the abdomen differ distinctly from those which grow on the forceps, the secondary appendage of the latter lying parallel to the receptacle and primary appendage, instead of projecting at right angles as in the material from the abdomen, in which this appendage is also longer, darker and more conspicuous. The two seem otherwise practically identical.

***Rickia rostrata* nov. sp.**

Axis hyaline indeterminate broad, somewhat narrow below, elongate, its margins somewhat uneven, the cells relatively large and thin-walled. Foot small, basal cell of the receptacle broader than long, the subbasal cell flattened, slightly intruded between two small nearly equal cells which lie right and left above it and form the bases of the two lateral rows of the axis which consist of three cell-rows: the cells of the axial row somewhat larger than the others, seldom over twenty in number, rarely twenty-seven but often less, the lower more or less elongated vertically, those below the perithecium often shorter, the distal portion of about six small cells ending below the base of the primary appendage and in contact with the venter of the perithecium, the wall-cells of which become obliterated in this region: the cells of the anterior and posterior rows similar, narrower, a majority of them appendiculate, the anterior row of seldom more than twenty cells, often less, rarely twenty-five: the posterior row of twenty-two cells or less, rarely thirty, ending at the base of the rostrate tip of the perithecium, where it bears the primary appendage. Primary appendage smaller than the secondary ones, short, hyaline, evanescent; the base relatively small, truncate-conical, projecting free at an angle of 45° or less to the axis, distally suffused. Secondary appendages hyaline, variably elongate, mostly evanescent, subtended by a small cell separated from the axis-cell which is prolonged to form a slender dark purplish brown base simulating an appendage, free and projecting horizontally outward, or more often obliquely upward. Antheridia similarly borne, their irregular cells becoming more or less free in a mucus group. Venter of the perithecium hyaline, or faintly tinged with yellowish brown, broad, rounded outward, the ascogenic cell placed laterally

on the inner side, the distal portion contracted abruptly to form a characteristic rostrate termination almost twice as long as the venter, purplish brown, lighter and slightly constricted above the middle; the apex blunt, often slightly bent. Spores $20 \times 7.5 \mu$. Venter of perithecium, exclusive of marginal cells of axis, $42-48 \times 25-28 \mu$; the rostrate termination $63-72 \times 10-12 \mu$. Secondary appendages $24 \times 3.5 \mu$, not including their projecting basal cells which are $7-12 \times 2.5 \mu$. Total length to tip of perithecium $240-450 \times 20-35 \mu$.

On the right elytron of *Tanygnathus ruficollis* Kr., Java, and Sarawak, Borneo.

This species of which the specimens from Borneo are taken as the types, the Javan material being immature, is aberrant in several respects; more especially in its rostrate perithecium with inflated venter and laterally placed ascogenic cells. The secondary appendages suggest those of *Monoicomyces Leptochiri* in the general appearance of their dark projecting basal cells. Although a large species, it is not readily seen, since it lies perfectly flat on the elytron.

***Rickia Tomari* nov. sp.**

Form rather short and stout, foot small, structure determinate or subdeterminate, nearly hyaline, except the deep brown hyaline-tipped perithecium. Basal cell somewhat longer than broad, slightly intruded between, or broadly rounded and slightly overlapping a pair of subbasal, nearly equal, somewhat irregular cells above which three cell-rows are distinguished: an axial row of three larger and somewhat dissimilar cells, followed by three or two successively smaller cells which lie in contact with the base of the perithecium on the posterior side: a posterior row of usually six more regular and somewhat rounded cells, the upper two or three small and extending to or nearly to, the end of the axial series, terminating in the flattened basal cell of the primary appendage; all its cells except the uppermost, cutting off three or four small cells which lie side by side somewhat irregularly and horizontally, each giving rise to well developed antheridia of the normal type, or to short appendages, smaller than the antheridia and much more numerous, both distinguished by dark brown cup-like suffusions at the hardly constricted subtending septa: the anterior row consisting of usually six marginal cells, the two terminal ones lying beside and united to the base of the perithecium, and extending higher up than the corresponding cells of the axial row on the opposite

side; a seventh cell lying immediately below the base of the perithecium, between the third cell of the axial and the fourth cell of the anterior series, the members of which, except the small terminal one, cut off small cells like those of the posterior series; the lowest, however, like the posterior subbasal cell, bearing only a single appendiculate cell. Perithecium nearly symmetrical, erect, rich black-brown except at the base where it is yellowish, and at the contrasting hyaline tip; the venter slightly inflated below, tapering slightly above; the upper half of its suffused portion broad, with often nearly parallel margins, and slightly enlarged below the abruptly distinguished, contrasting, hyaline, nearly symmetrical, blunt-conical tip. Perithecia $80-90 \times 22-24 \mu$. Antheridia $10 \times 3.5 \mu$. Total length to tip of perithecium $135-150 \times 30-36 \mu$.

On the elytra of *Tomarus* sp., No. 2095: Peradeniya, Ceylon.

This species is not nearly allied to any other that is known to me, and is easily distinguished by its white-tipped, deep brown perithecium, the body of which is more or less clearly distinguished into an inflated ventral and broad neck-portion, above which the short tip is abruptly differentiated.

***Rickia marginata* nov. sp.**

Hyaline or faintly yellowish, with thick white walls, the appendages only becoming slightly brownish, broad and flattened, very variable in size; the cells of the receptacle multinucleate. Basal cell longer than broad, broader distally, variably intruded between two paired elongated subbasal cells, the posterior somewhat longer, distally separated by a long single axial cell which extends above the base of the perithecium and, together with a small flat cell lying above it close against the venter and terminating in an appendage, constitutes the axial series: the anterior series consisting of the anterior subbasal cell and a normally single and elongate cell, which may occasionally be irregularly divided, and extends from its apex to the base of the perithecium; the posterior series also consisting normally of the posterior subbasal cell and a single greatly elongated cell, rarely divided transversely, followed by a smaller cell usually somewhat longer than broad, often lying nearly horizontally and ending in the basal cell of the primary appendage, around which it cuts off small, often numerous, appendiculate cells all of which bear single appendages not distinguishable from the primary appendage; the

whole forming a dense terminal group, the members usually much more elongate than those which arise lower down: the two subbasal and the lateral cells also giving rise to numerous secondary appendages, subtended by small lateral basal cells, either closely associated to form a continuous margin, or variable and irregularly distributed singly or in groups; the lumen of these cells small, the walls very thick, the single cells or groups slightly prominent beyond the margin, each separated from the appendage by a large cup-like brownish black suffusion at the constricted septum: the appendages variably elongated, unicellular, cylindrical, or irregularly somewhat inflated, or often slightly tapering. Antheridia apparently few in number, becoming more or less free and irregularly developed. Perithecium concolorous, one half free, and convex on the inner side; wholly free and straight, or slightly concave externally, usually projecting outward at a slight angle to the axis; relatively small in well developed individuals; the walls thick; the tip not distinguished, truncate conical or bluntly rounded. Perithecia $75-80 \times 35-38 \mu$. Spores $46 \times 4.5 \mu$. Receptacle $150-625 \times 46-85 \mu$. Lateral appendages $30-80 \times 5 \mu$; terminal up to $300 \times 8 \mu$.

In various positions on *Heterophaga punctulata* Motsch. (det. Champion); No. 2108 Peradeniya, Ceylon.

As will be seen from the above description, this species is clearly distinguished by the unusual character of its perithecium, the greatly elongated cells of which separate often very numerous appendiculate cells seriatly arranged along their margins. The occasional occurrence of septation in these long cells appears to be a secondary phenomenon. The antheridia have not been very satisfactorily made out, but, as in some other instances, appear to become more or less free in irregular groups. Although far more highly developed this species remotely resembles *Rickia Lispini* in the character of the cell-series which form the receptacle.

***Rickia Coptengalis* nov. sp.**

Rather long and broad with blackish brown and yellowish brown suffusions; the receptacle of about the same width throughout, except where it becomes narrowed at the base; the basal cell narrower than the somewhat rounded foot, hyaline and contrasting with the two suffused, paired, and nearly triangular cells above it, between which its bluntly rounded distal end is intruded. Above this pair of cells the

receptacle is triseriate; the lower halves of the basal cells of the two lateral series in contact, the upper separated through the intrusion of the basal cell of the middle series. Cells of the middle series slightly longer than broad, for the most part, thirty-two to thirty-four in number, their walls becoming suffused with yellow brown from below upward; the distal eight or nine small, flattened, with rounded contour, partaking of the yellow brown suffusion of the perithecium to which they are united; the series ending a short distance below the base of the deeply suffused tip, and opposite and within the basal cell of the primary appendage. The anterior row consisting of from forty-two to forty-four cells, the lower two or three deeply suffused, the suffusion decreasing upward; these, and a few cells above them, decreasingly oblique in relation to one another; three or four of the distal cells of the series, which ends abruptly at the persistent insertion of the trichogyne which subtends the deeply suffused tip of the perithecium, being without appendages; while of the remaining cells, about eight or ten at both the upper and lower ends of the series, cut off one, or two, appendiculate cells from the upper outer angle; while all the rest cut off three such cells, the successive groups of threes forming a continuous and more or less symmetrically disposed lateral series, the successive groups partly separated by the external pointed prolongation which characterizes each of the cells of the main anterior axis in this region; the appendiculate cells bearing, subtended by the usual cup-shaped suffused septa, either short hyaline inconspicuous appendages, or longer curved flask-shaped purplish brown antheridia, the venters of which are at first quite hyaline, two antheridia more commonly associated with one appendage in these sets of three. The posterior row ending in the two-celled base of the primary appendage, the subbasal cell of which is small and free, while its basal cell appears to end the distal row, from the members of which it is in no way distinguished, and which comprises from thirty-five to forty cells similar in general to those of the anterior series, and producing antheridia and appendages in a similar fashion, and subsymmetrically placed in relation to them. Perithecium rather long, slightly and subsymmetrically inflated, erect, or turned slightly to one side, deeply suffused with brown, translucent; almost wholly enclosed, except the broad short nearly symmetrical abruptly distinguished opaque tip, and a very small portion of its anterior margin; the apex hyaline, contrasting, abruptly distinguished, the distal margin slightly uneven from the minute projecting lip-cells. Perithecia $100-112 \times 28-30 \mu$, or including the marginal cells of receptacle, $\times 46-55 \mu$. Total

length to tip of perithecium 450–500 μ , greatest width 40 μ . Antheridia about 12 μ . Appendages about 8 μ .

On *Coptengis Shepardi* Pasc., Island of Djilolo. No. 1779, M. C. Z.; the type on the margin of the right elytron; the variety on the inferior surface of the thorax and prothorax.

The variety of this species above referred to, was found on the same host, and differs in its smaller size, having a maximum length of 175 μ , the members of its three cell-rows being half as numerous in each series; none of the marginal cells separating more than two appendiculate cells; the antheridia longer and somewhat more slender, the appendages longer and more conspicuous, the tip of the perithecium bent abruptly sidewise so that the apex appears to be evenly rounded and suffused, although it is in reality hyaline and lateral in position. Although the differences just mentioned appear to be constant, the two forms resemble one another so closely that it has not seemed desirable to separate them. The species is a very striking and beautiful one, peculiar from the almost symmetrical lace-like pattern of its cell-structure, and the very large numbers of conspicuous purple-necked antheridia which it produces.

***Rickia Onthophagi*, nov. sp.**

Rather long, hyaline to pale straw-yellow, structure subdeterminate, foot relatively large. Basal cell longer than broad, slightly narrower and faintly suffused below; its distal septum horizontal separating it from two cells above which may be symmetrically paired or obliquely related, the posterior cell placed higher and pointed below; the receptacle above consisting of three cell-series; the basal cell of the axial series either lying wholly above the basal cells of the two lateral series, or intruded between them for half their length: the axial series consisting of thirteen or fourteen cells of unequal length, but longer than broad, the upper six or seven cells much smaller and nearly isodiametric, lying in close contact with the inner margin of the lower half of the perithecium: the anterior row consisting of nine or ten cells extending to the base of the perithecium, each cell cutting off a vertical series of subtriangular small cells, three or four from the upper to one from the lowest members, all of which give rise to antheridia, or rarely to very small appendages: the posterior series similar to the anterior, consisting of about twelve to fourteen cells, and terminating in the two-celled, somewhat prominent, divergent base of the primary

appendage. Perithecium one half free on the inner side, wholly free externally, concolorous, the body long elliptical or broader below, the tip abruptly distinguished, short, broad, purplish brown, except the bluntly rounded subhyaline apex. Antheridia relatively long, curved, sharp and beak-like. Appendages minute, hardly distinguishable and very few in number. Perithecium $65-100 \times 28-35 \mu$. Spores $50 \times 7 \mu$ (in perithecium). Antheridia $15 \times 5 \mu$. Appendages $4 \times 3.5 \mu$. Total length to tip of perithecium $260-340 \times 40-44 \mu$.

On the inferior tip of the abdomen of *Onthophagus* sp. No. 2094, Peradeniya, Ceylon.

This species which is the first member of the family reported on Scarabeidae, presents no very striking peculiarities. It is distinguished by its very numerous antheridia and scanty minute appendages.

***Rickia compressa*, nov. sp.**

Straight or slightly curved, rather stout, subsymmetrical, wholly hyaline. Basal cell very small, subtriangular, the subbasal broader, flattened, sometimes obliquely divided, followed by two superposed pairs of cells above which the receptacle is triseriate; the middle row consisting of from thirteen to fifteen cells, the eight lower squarish, the upper ones extending along the posterior margin of the perithecium against which they are flattened, the two to three distal ones free externally above the insertion of the primary appendage; the free divergent basal cell of which terminates the posterior row of nine to twelve cells; the anterior row consisting of eight or nine cells, its external margin evenly continuous with that of the perithecium, to the base of which it extends: a variable but small number of the cells of both the anterior and posterior rows separate a small cell distally and externally, which form the basal cells of the hyaline slightly tapering secondary appendages. Perithecium externally free, straight, erect, rather stout, but slightly inflated, the tip abruptly distinguished, compressed, symmetrical, ending in a blunt nearly symmetrical apex. Perithecium, $60-75 \times 20-22 \mu$, not including marginal cells of the median series. Receptacle, to tip of primary appendage-cell, $140-155 \mu$. Secondary appendages $20-40 \times 4-5 \mu$. Total length to tip of perithecium $175-200 \times 32-35 \mu$.

On the antennae and prothorax of *Leptochirus* sp., vel aff. No. 1417, Java, (Rouyer).

This species is described from four specimens in good condition but

may show more variability than is indicated by the diagnosis when abundant material is available. It is most readily distinguished by the abruptly differentiated compressed tip of the perithecium. It differs from *R. Leptochiri* in having a triseriate receptacle.

***Rickia Uropodae* nov. sp.**

Form rather stout, habit more or less crest-like, axis indeterminate. Basal cell abruptly distinguished, more than twice as long as broad, slightly curved, with thick brownish yellow walls, and followed by two small paired cells symmetrically placed; above which the cells of the axis are triseriate, hyaline: the axial row united to the perithecium laterally nearly to the apex, three or four of its distal cells extending free beyond the insertion of the primary appendage, some of them bearing secondary appendages, its cells below the base of the perithecium small and squarish: of the two lateral axis-rows one, the anterior, is more nearly straight or not strongly curved, usually consisting of from eight to twelve cells, terminating at the base of the perithecium; one to four of its slightly prominent and radially elongated cells bearing at irregular intervals single, relatively large, compound antheridia which are subtended by single small triangular cells: the posterior lateral series, which is strongly curved, consists of from twenty-five to thirty or more cells which are somewhat more elongated radially (broader), and all of which without exception give rise to large pear-shaped bladder-like appendages, hyaline, becoming brown, short, slightly curved outward, subtended by a single small cell to which they are attached by a narrow stalk, and distinguished by a dark septum; the series ending in the large highly differentiated primary appendage, the terminal (appendage-) cell of which is evanescent; the two-celled sessile base large, cylindrical or slightly narrower distally in the region of its upper and much smaller cell; the whole brownish yellow, free, projecting outward at a small angle from the axis below it, its origin about three quarters of the distance from the base to the apex of the perithecium. Perithecium dark rich brown, wholly free externally, turned to an almost horizontal position by the curvature of the axis; the tip broad, not very clearly distinguished, about half free on the inner side, the apex blunt, broad, somewhat asymmetrical. Perithecium, exclusive of marginal cells, $60 \times 18 \mu$. Basal part of primary appendage $16 \times 8 \mu$. Secondary appendages $18 \times 9 \mu$. Total length $100-120 \times 30 \mu$.

On various parts of a species of *Uropoda* parasitic on large Passali, Java (Thompson).

A very distinct and beautiful species, occurring rarely on various parts of its host, more commonly dorsally, sometimes in company with *R. Berlesiana*. The antheridia are very well developed, and their compound character is more clearly distinguishable than is usual in species of this genus. They do not persist, however, and usually appear like more or less broken appendages after the perithecium has begun to mature. It is more nearly allied to *R. cristata* than to other described species, but is clearly distinguished by its pear-shaped secondary appendages, as well as by numerous other details of structure.

***Rickia uncinata* nov. sp.**

Axis slender, elongate, hyaline, simple, or occasionally branched, consisting of three parallel rows above the basal cell. Appendages two or three to ten, scattered irregularly, short, nearly cylindrical with broadly rounded apex, the basal cell minute, subtriangular, hardly projecting and distinguished by a black septum; an antheridium usually subtending the perithecium on its outer side; the primary appendage three-celled, the terminal cell shorter than the secondary appendages and more inflated, distinguished by a blackened septum from its two-celled base which is subcylindrical and projects free at an angle of about 45° , terminating the outer axis cell-row opposite the middle of the perithecium. Perithecium terminal, hyaline, or becoming slightly suffused with brownish, slightly curved, the median axis-row extending along its convex margin for about three fifths to two thirds of its length, and ending just below the persistent blackened base of the trichogyne; the tip contrasting brown, the apex partly hyaline, the whole abruptly recurved outward. Perithecia $38-42 \times 12-16 \mu$, including the marginal cells. Primary appendage, including base, 24μ long; secondary appendages $12 \times 4 \mu$. Total length $150-500 \times 10 \mu$.

On large Passali from Java. (Thompson).

This species resembles *R. nutans* in general habit, but is at once distinguished by its three-ranked axis, and the absence of apical appendages on the perithecium. It rarely branches, except when injured. A single specimen found growing on the leg of a species of *Macrocheles* parasitic on the same host, appears also to belong to this species. This individual, however, is relatively short and stout, its

receptacle even shorter than the perithecium, the marginal portion beside the perithecium being more prominently developed, almost all the cells here bearing appendages; the primary appendage projecting forward against the tip of the perithecium, which is not otherwise exactly like that of the type.

***Rickia nutans* nov. sp.**

Receptacle colorless, slender, elongate, often branched, the axis consisting of two rows of cells above the basal cell; the three-celled primary appendage remaining above the third cell from the foot, the double axis extending indeterminately beyond it, its distal cell small and distinguished by a finally blackened septum, the other two cells forming a stout basal portion which is wholly free, distinguished by a constriction from the cell which bears it and broader toward its base. The two cell-series, whether primary or secondary, otherwise without appendages, except one to three which always subtend the perithecium below its convex side: the axis terminations curved and slightly broader as the perithecia are reached, about five flattened cells of one of the cell-series forming a hyaline narrow contrasting margin, extending to the apex of the perithecium on its convex side; one to three of the terminal cells of the other series larger, obliquely elongated laterally and upward, the uppermost in oblique contact with the perithecium for a short distance above its base. Perithecium continuing the curvature of the axis which bears it, rich brown, contrasting, the tip much darker, but not otherwise differentiated; two of the lip-cells forming relatively long, stout, tapering, divergent, blunt appendages, which are directed vertically or obliquely downward. Perithecia $58-66 \times 20 \mu$, the apical appendages $15-16 \mu$. Total length 750μ or less, the diameter about 12μ , just below the perithecium about 16μ .

At the tip of the abdomen of large Passali. No. 2114a, Peradeniya, Ceylon.

This species is very clearly distinguished by its brown appendiculate perithecium and nodding habit, which suggests the head and neck of a flamingo. The third row of axis-cells is not developed as in more typical species, and is represented by the single cell which subtends the primary appendage near the base.

RICKIA BERLESIANA (Bacc.) Paoli.

This species is not uncommon on large Passali in Java, Ceylon and Australia, as well as on various genera of mites which infest them. Among the latter it has been found on *Canestrinia* sp., *Uropoda* sp., *Celaenopsis* sp., and *Macrochelus* sp. which were collected for me in Java by Dr. W. B. Thompson. On Passali it grows, as a rule, much more luxuriantly, sometimes reaching a length of 800 μ . It is a graceful and very striking species, and is easily distinguished by the dark brown contrasting color of its perithecium and axial row of cells. Unlike most other species having a similar long and slender habit, it does not appear to produce secondary branches of the axis, even when the primary perithecium has been destroyed, although nearly sessile secondary perithecia are occasionally met with.

RICKIA DISCOPOMAE Thaxter.

Since this species was described on the mite *Discopoma*, it has been found in far better condition growing on the passaline beetle on which the latter is a parasite. It may attain a length of a millimeter, and often branches several times irregularly, as many as six perithecia being sometimes developed at the tips of a corresponding number of axes. No individuals have been noticed on Javan material.

***Tettigomyces* nov. gen.**

Receptacle consisting of an indeterminate series of cells superposed in a single row, or the distal ones longitudinally divided; foot large, black, without penetrating rhizoids. Appendage clearly distinguished, or a mere continuation of the receptacle: in the type consisting of a short series of cells each of which gives rise on its inner side to two opposed series of usually paired antheridial cells, the two series of paired cells arching over a central cavity into which the sperm-cells are discharged, and which opens by a subterminal pore; the cushion-like compound antheridium thus formed compact and clearly defined in the type, while in other species the antheridial cells may be indistinguishable, or more or less irregularly associated in rows with the bases of sterile branches which may arise from the appendage. Peri-

thecia somewhat indeterminate, the wall-cells numerous in each of the four rows; solitary, or several developed at intervals from an elongate receptacle. Trichogyne branched, more or less persistent at the base of the perithecium on the inner side. Asci eight-spored. Spores 1-septate; the basal (upper) segment twice as long as the terminal and with lateral cushions at the tip. Ascogenic cells more than two.

Owing to the unusual variations which are exhibited by the different species of this genus, it is very difficult to define it satisfactorily. In *T. Gryllotalpae*, which is taken as the type, the antheridium may be as clearly defined as it is in *Eucantharomyces*. In fact these organs are very similar in general appearance in the two genera. On the other hand there are some species in which I have been unable to discover any signs of antheridial cells; and in others the latter are associated with the bases of certain sterile branches, arising near the base of the appendage, which closely resembles that of some species of *Ceratomyces* and its allies, a resemblance which is further accentuated by the characters of the multicellular receptacle and perithecium, and the position of the trichogyne which is left behind at the base of the perithecium. In fact a species like *T. brevis* would be placed in *Ceratomyces* without hesitation, were it not for the presence of these peculiar groups of antheridial cells which, from analogy with the type, must be considered compound antheridia. The genus must therefore find its place among the Peyritsiellaceae. There is a certain resemblance between some species of this genus and Spegazzini's *Cochliomyces* which, although its characters are not at all clearly indicated by the published figures and descriptions, appears to differ in possessing appendages on both sides of the perithecium. There is, moreover, a superficial resemblance to *Ecteinomyces* which, however, differs in the character of its antheridia and determinate perithecia.

The trichogyne is usually more or less persistent and might readily be mistaken for a branch of the appendage.

The antheridium in the type is terminated by the peculiar spine found in *Eucantharomyces* and various other genera, which appears to correspond to the persistent apex of the spore. In the present instance this spine lies just beside the subterminal pore through which the sperm cells are discharged from the common antheridial cavity. The asci are certainly 8-spored in some cases although I have not in every instance been able actually to count this number.

It is somewhat remarkable that a single host should in the same locality be parasitized by so many distinct species, but although I have endeavored to reduce the number which may be distinguished

as far as possible, I have been forced to the conclusion that at least seven must be recognized on the Javan host, which, although some of them may be mingled on the same substratum, retain their individuality, without essential departure from their type form. I have even been uncertain whether the type itself might not properly be subdivided. In addition to the eight species here described three others are known to me; two from Africa and one from South America.

***Tettigomyces Gryllotalpae* nov. sp.**

Colorless to pale straw-colored, sometimes faintly suffused with brownish. Receptacle variably elongated, slender or rather stout, nearly uniform throughout, or somewhat broader distally; consisting of from twelve to forty or more superposed flattened cells which become squarish; the distal one divided by a longitudinal septum into two cells, one of which subtends the perithecium, while the other forms the base of the appendage. Perithecium solitary, straight, or somewhat curved outward, tapering more or less continuously from the base to the tip, often somewhat inflated below; the tip well, often abruptly distinguished, narrow and nearly cylindrical, straight or slightly bent, the apex symmetrically rounded or slightly oblique; the outer wall-cells 18-21 in each row, the inner 15-19; usually becoming more or less prominent at maturity, so that the outline may be conspicuously corrugated. Appendage erect, or diverging at right angles from the perithecium; variably and often abnormally developed; consisting of from four or five to a dozen, usually somewhat flattened and obliquely superposed cells, slightly prominent externally, all of which, except the basal and terminal ones, may bear, on the inner side, paired double rows of antheridial cells; the terminal cell sometimes bearing also a short sterile branch beside the terminal minute spine-like process. Perithecia $135-310 \times 35-62 \mu$. Spores $45-50 \times 4.5 \mu$. Appendage $40-60 \times 25-40 \mu$. Receptacle $550-1400 \times 25-65 \mu$. Total length to tip of perithecium $235-1560 \mu$.

On the inferior surface of the abdomen and on anal appendages of *Gryllotalpa Africana* Palis. Samarang, Java.

This species varies very greatly not only in size, as will be seen by the measurements above given, but in the character of its perithecium and appendage. The latter in the type form is more or less erect and stout, with the rows of antheridial cells lying subhorizontally or obliquely inward and upward, and this character is usually associated

with a stouter receptacle, the outline of the perithecium being more conspicuously corrugated and the tip broader, somewhat asymmetrical and slightly bent distally. The more common type on the abdomen differs at maturity in possessing a usually more slender receptacle, which may be very greatly elongated, the appendage projecting at right angles to the main axis and roughly triangular in outline; the rows of antheridial cells vertical, or even oblique outward; the sterile cells decreasing rapidly in size to the tip: the perithecium having a less prominently corrugated outline, and the tip longer, more abruptly distinguished, nearly isodiametric, slender, with a symmetrically rounded apex. A third variation which occurs on the inferior surface of the thorax and adjacent parts of the abdomen and legs, is usually smaller and stouter; the appendage becoming very soon disorganized and remaining as a yellowish mass beside the base of the perithecium. The latter is less characteristic in form; the tip not well distinguished and stout, the outline hardly corrugated. Although the association of characters in these three variations is more or less constant, and the extremes might readily be separated as distinct species, intermediate conditions are sufficiently numerous to make the series more or less continuous.

This species is by far the most abundant of those described, and from its large size and conspicuous black foot, is readily seen even with the naked eye. A species very closely allied, and perhaps identical, has also been examined from African *Gryllotalpae*.

***Tettigomyces pterophilus* nov. sp.**

Nearly colorless. Receptacle slender, variably elongated, more or less uniform above the basal region which may be slightly narrower, straight, curved, or somewhat sinuous, the cells slightly prominent and separated by more or less distinct constrictions at the septa. Appendage, which is assumed to arise opposite the base of the uppermost perithecium, not distinguished from the receptacle, slender, elongate, curved outward, tapering to a sterile termination; bearing at irregular intervals from its inner side, single scattered branches of variable number, simple or usually not more than once branched, and resembling the termination of the appendage. Perithecia one to four, or even five, superposed and arising at variable intervals from the receptacle, the axial trichogyne more or less persistent and associated with a small appendage just above it, the basal cell of which appears

to produce a small number of antheridial cells. The perithecium straight, or somewhat curved outward, tapering continuously from its hardly inflated base to the tip, which is but slightly distinguished, nearly conical, the apex bluntly pointed, often surmounted by a short apiculus; the inner wall-cells twenty-four or less, the outer usually twenty-six, those below the tip slightly prominent. Perithecia $125-190 \times 25-50 \mu$. Spores $45 \times 2.5 \mu$. Total length to tip of appendage $400-1000 \times 20-30 \mu$.

On the wing-tips of *Gryllotalpa Africana* Palis. Samarang, Java.

This species was found in considerable numbers on a single individual of its host, all the others examined being quite free from it. Although the perithecia are similar to those of *T. brevis*, the two species illustrate the extremes of development in the receptacle of this genus. There is great variability in the development of different individuals, smaller forms with single perithecia being nearly as abundant as those in which several are produced.

Tettigomyces Indicus nov. sp.

Receptacle variably elongated about the same diameter throughout or somewhat broader below the perithecia, consisting of sixty or fewer cells superposed in a simple series; the cells much flattened and irregular. Appendage continuous with the receptacle, not distinguished from it, greatly elongated, simple, divergent, distally flexed inward, tapering; consisting of about eighty or less superposed cells. Perithecia one to several arising at intervals from the receptacle; usually solitary, rather stout and short, the body hardly narrower distally, but very abruptly distinguished from the tip, to the base of which its outline bends almost at right angles; the tip short and more or less pointed; the outer and inner rows of wall-cells having seventeen and fifteen cells respectively, those immediately below the base of the tip becoming prominently rounded outward, the lower cells of the inner row not at all prominent and having half, or less than half the transverse diameter of the corresponding cells of the outer row. Perithecia $120 \times 44 \mu$. Receptacle $100-230 \times 20-28 \mu$. Appendage $200-400 \mu$.

On bristles from various parts of *Gryllotalpa* sp., M. C. Z. Scudder Collection; No. 2678; North India.

Although numerous specimens of this species were obtained but few are fully matured and from these the perithecial characters have been

taken. No signs of antheridial cells have been seen, and the appendage appears to be simple, without sterile branches. The general habit is somewhat like that of *T. pterophilus*, although it is at once distinguished by the form of its mature perithecium. In only one of the specimens examined are two perithecia matured.

***Tettigomyces chaetophilus* nov. sp.**

Quite hyaline. Receptacle stout somewhat broader distally, consisting of from four to eight single superposed cells, which may be followed by from one to three cells once divided longitudinally; the cells separated on the perithecial side much smaller than those which are continuous with the appendage. Appendage erect, its axis coincident with that of the receptacle, sometimes slightly curved outward distally, consisting of from seven to seventeen flattened superposed cells, two or three of the distal ones bearing sterile branches successively or irregularly from the inner side; the terminal cell usually bearing two such branches; the latter simple or once branched, comparatively slender, short, and tapering. Perithecium divergent and strongly curved outward, especially distally, the main body tapering only just below the tip; which is abruptly distinguished, rather short and stout, the distal and basal halves well distinguished, the distal tapering more rapidly to the bluntly pointed apex which may be slightly apiculate; the outer and inner rows of wall-cells containing usually twenty and eighteen cells respectively; the cells of the inner row, except about three just below the tip which are larger, having about one quarter to one third the transverse diameter of those in the outer row. Perithecia $100-120 \times 28-35 \mu$. Receptacle $40-75 \times 30-40 \mu$. Appendage $50-100 \mu$. Total length to tip of perithecium $150-200 \mu$, including the foot (40μ) which is sharply pointed below.

On bristles of the 'abdominal antennae' of *Gryllotalpa Africana* Palis. Samarang, Java.

This species is more nearly allied to *T. galeata* from which it is at once distinguished by its smaller size, and the entirely different conformation at the tip of the perithecium. The extreme difference between the transverse diameter of the cells of the outer row of wall-cells and those of the inner distinguish it from all other known forms, with the exception of *T. Indicus*.

***Tettigomyces galeatus* nov. sp.**

Quite hyaline. Receptacle broader distally, often much narrower toward the base, both margins usually even, consisting of from six to ten superposed flattened cells, followed by from three to six tiers of two cells each; those on the perithecial side smaller, and becoming divided radially and longitudinally, so that there are actually three cells in each tier. Appendage consisting of from six to nine cells, much flattened, and forming an erect, or usually but slightly divergent series; the terminal cell bearing two simple branches, two or three of the cells immediately below also bearing single simple stout tapering branches, usually absent from the remaining lower cells, from which double or single series of antheridial cells are separated on the inner side so as to form a more or less well defined antheridial cushion. Perithecium relatively large and stout, distinctly inflated below, when mature; tapering at first abruptly, then hardly perceptibly to the broad short tip which is well defined by an abrupt indentation of the margin on the outer, and a slight indentation followed by a slight elevation, on the inner side; the inner lip-cell forming a broad bluntly rounded terminal projection with small lumen, extending some distance beyond the pore which is lateral and external; the lateral lip-cells forming small papillae symmetrically placed on either side, and the outer lip-cell forming a similar, often less distinct subtending papilla, the whole tip having thus a somewhat galeate habit. Perithecia $190-225 \times 55-75 \mu$. Receptacle $100-140 \times 60-80 \mu$. Total length to tip of perithecium $250-400 \mu$.

On the inferior surface of abdomen of *Gryllotalpa Africana* Palis. Samarang, Java.

This species occurred somewhat rarely in the material examined. It is easily distinguished from its nearest ally *T. confusus* by its galeate tip and suberect appendage, which also differs in the absence of branches near its base.

***Tettigomyces confusus* nov. sp.**

Receptacle slightly broader distally, or nearly the same diameter throughout; consisting of from six to ten cells superposed in a single series, followed by from two to five tiers of two cells each; those on the perithecial side smaller, and usually divided in a radial vertical plane

so that each tier becomes three-celled. Appendage not distinguished from the receptacle, consisting of usually six successively smaller cells; the series somewhat curved outward, and bearing irregularly paired simple, stout, tapering branches from the inner side; the basal cells of which, above the base of the perithecium, produce more or less conspicuous groups of antheridial cells. Perithecium relatively short and stout, sometimes shorter than the receptacle, more or less evenly inflated below at maturity, tapering evenly to the tip, which is short, stout, and barely distinguished: the inner lip-cell prolonged to form a short blunt appendage; two, which are outer or lateral, ending in rounded prominences somewhat variably placed, forming two more or less distinct papillae lying side by side; the fourth forming a pointed apex which subtends the prolongation of the first; wall-cells variably, usually conspicuously prominent, those in the outer rows twenty to twenty-four, in the inner eighteen to twenty in number. Perithecia $120-200 \times 40-60 \mu$. Appendage 40μ ; its branches $100 \times 20 \mu$ at base. Receptacle $80-175 \times 32-50 \mu$. Total length to tip of perithecium $230-390 \mu$.

On abdominal 'antennae' of *Gryllotalpa Africana* Palis. Samarang, Java.

This species is very closely allied to *T. galeatus*, but is at once distinguished by the conformation of the tip of the perithecium which does not vary essentially in any of the numerous individuals examined.

***Tettigomyces brevis* nov. sp.**

Nearly colorless. Receptacle short and broad, the foot large and broad; consisting of from three to seven single superposed much flattened cells, followed by from one to three cells once longitudinally divided, this biseriate portion continuous with the appendage on one side and the base of the perithecium on the other. Appendage not distinguished from the receptacle, consisting of a series of from five to eight much flattened successively smaller cells which curves outward, or may be even recurved somewhat; all the cells bearing rather stout erect or somewhat curved septate tapering branches of variable length, which arise more or less in pairs from basal cells associated with numerous antheridial cells which are more or less distinctly visible as a rule. Perithecia variably elongated, the base slightly broader, tapering, usually very slightly, to the short stout tip; which is moderately well distinguished; the apex broad, slightly asymmetrical,

flattened, or irregularly rounded; the wall-cells more or less conspicuously prominent, except distally; the outer rows containing from twenty-seven to fifty cells, the inner from twenty-three to forty-one. Spores slender, $50 \times 3 \mu$. Perithecia $200-450 \times 40-60 \mu$. Appendage about $40-60 \mu$, the branches about $120-150 \mu$. Receptacle $25-75 \times 40-60 \mu$. Total length $230-550 \mu$.

On the inferior margin of the abdomen of *Gryllotalpa Africana* Palis., Samarang, Java.

This species is very clearly distinguished by its short receptacle and more or less indefinitely elongated perithecium, the basal cells of which are more clearly defined than in some other species of the genus, and form an irregular cell-group at the junction of the appendage and receptacle. The appendage, though it bears numerous erect branches in a tuft, often shows a copious formation of antheridial cells, the arrangement of which is very irregular as compared with that seen in the type species. It is most nearly related to *T. acuminatus*.

***Tettigomyces acuminatus* nov. sp.**

Nearly colorless. Receptacle stout, consisting of six to eleven flattened superposed cells often paired, followed by three or four which are once or twice longitudinally divided, the distal tier always of three cells, two of which are smaller, isodiametric and subtend the base of the perithecium; while the third, which is nearly twice as large, subtends the appendage; the cells on the perithecial side, especially just above the foot, more or less prominent singly or in pairs, the opposite margin usually even. Appendage consisting of eight or more flattened cells from which a cell is separated on the inner side bearing a furcate branch; the antheridial cells inconspicuous or lacking. Perithecia rather stout, curved slightly outward, considerably and somewhat asymmetrically inflated, tapering rather rapidly to the tip, which is abruptly distinguished above the rounded termination of the rest of the perithecium; tapering, relatively long, one or all four of the lip-cells prolonged to form a slender sharp process; wall-cells hardly prominent, except sometimes near the base on the inner side; the outer rows consisting of from twenty-four to twenty-six cells, the inner of twenty-two to twenty-four. Perithecia $150-200 \times 40-60 \mu$. Spores (in perithecium) $40-45 \times 3.5 \mu$. Receptacle $80 \times 40 \mu$. Total length to tip of perithecium $250-310 \mu$.

On the right margin of the inferior surface of the abdomen of *Gryllo-talpa Africana* Palis. Samarang, Java.

This species is most nearly related to *T. brevis*, from which it is most readily distinguished by the form of its perithecium, especially at the tip, as well as by its somewhat more highly developed receptacle. The appendages in the six types are all in bad condition and it is not possible to determine the exact character of the secondary branches which it bears. The latter appear to be similar, however, to those of *T. brevis* and *T. cladophorus*.

***Dichomyces gracilis* nov. sp.**

Basal cell of the receptacle hyaline, broader than long; middle cell of the lower tier barely translucent, the lateral cells opaque, wholly united to the middle tier, and extending upward above the base of the terminal tier, no portion being free; the middle tier pale dirty yellowish brown, concolorous with the terminal tier and the perithecia, and consisting of series of from six to fifteen cells on either side of the median cell; the two series bent upward and usually strongly inward, so as to overlap the distal tier nearly to the insertion of the primary perithecia; the terminal tier consisting of series of from six to fifteen cells, on either side of the median cell, which bend upward rather abruptly. Perithecia two to four, usually two or four, rarely more, very slender and elongate, with a venter, neck and tip, and even a stalk-portion often more or less distinctly differentiated at maturity; the venter slightly inflated just below the mid-region, and narrower toward the base, faintly purplish, tapering slightly to the neck-part which is perhaps a third as long and of equal diameter throughout; the tip slightly darker, moderately well distinguished, tapering to a broad flattish apex without appendages. Appendages relatively short, hyaline, the basal suffusion unusually prominent. Antheridia well developed, purplish brown. Perithecia $200-300 \times 22-30 \mu$. Receptacle, to base of primary perithecia, $125-160 \mu$, to tips of lateral series $150-235 \mu$. Appendages $20-25 \mu$. Greatest width distally $60-110 \mu$.

On the anal appendages of an undetermined Staphylinid near *Philonthus*. No. 1416, Java (Rouyer).

This species is most nearly allied to *D. Argentinus* Speg. from which it appears to differ in its peculiar incurved middle tier, the form of its perithecia, which occur only on the terminal tier, and in its much shorter appendages.

Monoicomyces Leptotrachelae nov. sp.

Basal cell small, the lower half suffused with blackish; the subbasal cell hardly distinguishable as such, owing to the densely crowded branches and branchlets bearing perithecia and antheridia which arise from it on either side of the main appendage, the basal cell of which is about as broad as long, the subbasal abruptly narrower, edged externally with blackish, the suffusion extending up along the margin of a short outcurved branch which arises from it distally and externally; one or two hyaline stouter branches also arising from it distally. Perithecia usually six in number, the stalk-cells moderate, broad distally, the basal cells large and hardly distinguished from the somewhat inflated venter, above which the body is subconical, tapering gradually and subsymmetrically to the blunt apex; the tip distinguished only by a slight irregularity of outline. Antheridial appendages usually eight, the stalk-cells arising close to that of the perithecium, about twice as long as broad, the pair next above slightly longer than broad and producing no antheridial cells, only the lower of the two pairs above it, associated with antheridia; their cells subequal and about as long as broad; the whole appendage of nearly equal diameter throughout, the terminal cells producing four to eight stout branches of variable length, which are usually curved outward, or even slightly recurved. Perithecia $75-110 \times 20-27 \mu$. Body of antheridium $40 \times 12 \mu$, its branches $40 \times 5 \mu$. Total length to tip of perithecium, largest, 185μ .

On the abdomen of *Leptotrachela Javana* Bernhauer. Samarang, Java.

The primary appendage of this species recalls that of *M. Echidnoglossae*, while its closely crowded perithecia and antheridia give it a general habit not unlike that of *M. Aleocharae*. It is more closely allied to the first of these species, but differs from the fact that the subbasal paired cells in the antheridial appendages are not associated with antheridia which are produced only from the small pair next above.

Monoicomyces Stenusae nov. sp.

Hyaline. Basal and subbasal cells subequal, small, but clearly distinguishable. The primary appendage consisting of a small more or less dome-shaped basal cell, separated from the small cell above by a deeply blackened septum continuous with the outer blackened margin

of the subbasal cell, which is also continuous with a similarly blackened branch, the whole forming a black outcurved or even recurved process from the convex side of which one or two hyaline erect branches or branchlets arise. Secondary receptacles variously developed, typically two, growing in opposite directions, rather slender and usually curved; their basal cells short, and giving rise at once to the first perithecium and antheridial appendage; the second much longer, bearing the second perithecium and antheridium distally; the third still longer and usually terminated by two antheridia. In less well developed specimens only one branch may develop, with a single perithecium and antheridium; or both, if developed, may be much shorter and the habit more compact. Perithecia somewhat variable, typically with a well developed stalk-cell, which is narrower in the middle and broader distally than the small compact basal cell-region of the perithecium; which is abruptly distinguished, also, from the suddenly inflated venter above; the venter short, the rest of the body long, tapering evenly to the blunt point, the junctions of the wall-cells indicated by two successive elevations by which a neck and tip are distinguished. Antheridia relatively long and slender, the basal cell-pair and the subbasal about equal; the cells of the two antheridial pairs bulging distally so that this portion of the antheridium is marked by successive elevations and depressions; the distal cells giving rise to from two to four usually curved rather short branches. Perithecia; longest, including basal cells $135 \times 34 \mu$; stalk-cell $40 \times 12 \mu$. Body of antheridium $58 \times 9 \mu$, but very variable. Total length to tip of perithecium, longest 200μ .

On various parts of *Stenusa Ceylonica* Kr. No. 2085, Samarang, Java.

The short compact forms occur on the legs, the more highly developed specimens on the abdomen and elsewhere. Although not departing widely from the usual type this species does not appear to be nearly allied to any other form, when well developed.

Monoicomycetes Amauroderae nov. sp.

Hyaline, except for the brownish yellow perithecia. Basal and subbasal cells about equal in size, hardly longer than broad; the primary appendage simple, consisting of five or six superposed cells; the basal cell bent abruptly upward from the receptacle, and distinguished by a small black septum. Fertile branches typically two

growing in opposite directions, sometimes more; usually consisting of a single cell somewhat longer than broad, distally pointed, and bearing the antheridium and perithecium which diverge right and left at nearly a right angle. Stalk-cell of perithecium very elongate, abruptly distinguished by a slight distal enlargement from the basal cell-region, which is also relatively very large and long, and slightly broader distally than the venter of the relatively small perithecium which is hardly inflated and not distinguished from the usually curved rather elongate distal portion which tapers slightly to the blunt apex; the tip hardly or not at all distinguished. Stalk-cells of the antheridium relatively very long, (each about eight or nine times as long as broad), the basal pair broader distally and abruptly distinguished from the narrower base of the second pair which is shorter and also distinctly broader distally; abruptly distinguished from the two pairs above, the cells of the upper smaller and separated from the lower by a distinct constriction, bearing directly two terminal appendages, one usually longer than the other, sometimes only one, without evident basal cells in some instances. Perithecium: stalk-cell $156-275 \times 20 \mu$; basal cell-region $55-65 \times 20-28 \mu$; main body $118 \times 20-25 \mu$. Spores $30 \times 4 \mu$. Antheridia $62-82 \times 18-20 \mu$. Receptacle 32μ . Primary appendage $125-175 \times 10-15 \mu$. Antheridial appendages $40-150 \times 8 \mu$.

On the inferior abdomen and thorax of *Amaurodera Kraepelini* Fauv. No. 2078, Samarang, Java.

A species well distinguished by its peculiar long-stalked perithecium, with highly developed basal cells, and its simple primary appendages, as well as by its unusually elongate antheridial appendages.

***Monoicomyces denticulatus* nov. sp.**

Basal cell hyaline slightly narrower distally, somewhat broader than long; subbasal cell hyaline much smaller, bearing distally the somewhat divergent primary appendage which is distinguished by a blackish brown septum and consists of a single cell, nearly twice as long as broad, stout, distally rounded and externally rather deeply suffused with blackish brown. Fertile branches two; consisting of single more or less deeply suffused cells, which arise on either side of the subbasal cell, and bear single antheridia and perithecia. Antheridial appendages symmetrically paired, slightly smoky, their stalk-cells hardly distinguishable from the basal cells, deeply suffused externally, nearly twice as long as broad, the two pairs above much smaller, both

producing antheridia; the cells of the lower decidedly larger than those of the upper; the terminal pair closely associated to form an evenly rounded termination, in the types without appendages of any kind. Perithecia short and stout, pale straw-colored with a slight smoky tinge; the stalk-cell short, broader distally, somewhat longer than broad; the body asymmetrical, one margin straight and ending in a tooth-like, brown, erect and slightly curved appendage at the tip; the other slightly and broadly convex, and abruptly indented below the small hyaline broadly rounded apex formed by the other lip-cells, which are slightly exceeded by the tooth-like appendage. Perithecia $125-134 \times 40 \mu$, the stalk-cell $40-45 \mu$. The tooth-like process $18 \times 10 \mu$ at base. Antheridia $65 \times 24 \mu$. Primary appendage $24 \times 12 \mu$. Receptacle, exclusive of foot, about 24μ . Total length to tip of perithecium 215μ , including foot.

On the tip of abdomen of *Homalota nigrescens* Fauv. Samarang, Java.

But three specimens of this small species have been examined, one of which is immature, while the others are well developed and in good condition. Each bears a single perithecium only, but it is probable that more may be formed. The form is clearly distinguished from all others known by the tooth-like appendage at the tip of its perithecium. It is possible that the antheridia may in some cases be appendiculate, but there is no indication in the types that such is the case.

***Herpomyces Panesthia* nov. sp.**

Male individual. Receptacle consisting of four superposed cells, the basal much larger and longer and distally inflated; the rest subequal; all, or only the two terminal ones bearing antheridia directly, or single cells from which antheridia arise distally; the antheridia twelve or more, of the usual type; the group broad below, the necks more or less appressed. Receptacle 80μ , its basal cell $40 \times 20 \mu$. Antheridia 60μ . Total length to tip of antheridia about 150μ .

Female individual. Hyaline. Primary receptacle minute, the basal cell more elongate, narrow below, the rest subequal, the terminal one nearly circular in outline, except its base, and terminated by a blunt apiculus; the subbasal cell giving rise to two secondary receptacles each of which produces a single perithecium on either side of the primary receptacle. Secondary receptacle rather strongly curved, distally broader, the cells vertically elongated, one of them, the largest, extend-

ing from the base to the lower basal cell of the perithecium, which is also subtended by a short cell, below which a third cell extends down to the substratum and from which three or four distally pointed successively shorter cells are separated laterally, externally, and somewhat obliquely, all of them extending to the substratum. The lowest basal cell of the perithecium associated with a general constriction which it wholly occupies, flattened and connected by a more or less narrow isthmus with a broader portion which lies immediately below the ascigerous cavity and forms, together with the three remaining basal cells which are more or less rounded and subequal, a short nearly symmetrical rather abruptly inflated base, broader than that of the ascigerous venter; the latter is relatively rather short, slightly inflated, the junctions of the wall-cells barely indicated, the outline subeven, the structure of the distal portion similar in general to that of *H. tricuspidatus*; the third wall-cell of the anterior row slightly concave, not at all prominent, its margin continuous with that of the cell below, subtending an erect incurved spinous process, a similar process arising from the fourth wall cell of one of the lateral rows, these two processes extending distinctly beyond the erect spine which subtends the blunt short incurved tip of the perithecium. Perithecium, from basal cells to tip of upper spine, about $92\ \mu$; to tip of lower spines about $102\ \mu$, greatest width $30\ \mu$. Primary receptacle $26 \times 7\ \mu$; secondary receptacle about $60 \times 28\ \mu$. Total length to tip of longest spine $180\ \mu$.

On the antennae of *Pancsthia lobipennis* Brunn. Near Peradeniya, Ceylon.

This species occurs rarely on the above mentioned host, usually singly, and always produces a single pair of perithecia only. It differs in this respect from *H. Paracensis* and *H. tricuspidatus* to which it is nearly allied, as well as in minor details of its secondary receptacle and perithecium. The secondary receptacle is considerably twisted, so that it is almost impossible to see its broad face, as in the two species just mentioned.

Synandromyces Javanus nov. sp.

Pale straw-yellow throughout. Basal cell of the receptacle erect, narrow, almost completely surrounded by the subbasal cell and the stalk-cell of the appendage, which are nearly equal and lie almost symmetrically on either side of it, extending nearly to its base, meeting for a short distance above it. Body of the antheridium consisting of

two superposed pairs of rounded cells separated by indentations; the upper smaller, each bearing a single antheridium distally. Stalk-cell of the perithecium short and very slender, the very broad base of the perithecium arising from it laterally and asymmetrically, the body short and stout, much inflated, asymmetrical when viewed sidewise, tapering abruptly distally; the tip itself not well distinguished, broad; the apex rounded, slightly sulcate. Perithecium $120-135 \times 40-50 \mu$. Receptacle, including stalk-cell, of appendage, $40 \times 32 \mu$, free portion of antheridial appendage, to tips of antheridial cells, $35-40 \times 22-25 \mu$. Total length to tip of perithecium $155-175 \mu$.

At the base of the posterior legs of a cryptophagid beetle, belonging to the section Telmatophilini. No. 2147, Samarang, Java.

This species differs from others known to me in having only two antheridia. A second and very distinct species was found on the same host, having a much reduced appendage and a much longer black perithecial stalk-cell. The single specimen, however, is too broken for description.

ARTHORHYNCHUS NYCTERIBEA (Peyr).

Specimens of *Penicillidia Jenynsi* Wstw. collected at Peradeniya, Ceylon, and infested by this species have been very kindly communicated to me by Dr. Hugh Scott. The individuals appear to correspond in all essential respects to European material and differ only in their somewhat larger size, some of them having a total length of about a millimeter, and paler color.

Stigmatomyces Stilici nov. sp.

Basal cell of the receptacle about twice as long as the subbasal, narrower below and more or less deeply suffused with blackish brown; distally hyaline and broader than the base of the subbasal cell from which it is thus abruptly distinguished; subbasal cell faintly suffused with yellowish brown, about as broad as long, its basal portion thin-walled and distinctly differentiated, five sided, distally pointed and obliquely separated from the stalk-cell of the appendage on one side and that of the perithecium on the other. Stalk-cell of the appendage subtriangular, externally convex, the basal septum oblique and practically continuous with the short inner margin, which is in contact with

the base of the perithecial stalk-cell; basal cell somewhat darker, separated by a slight constriction, distally slightly protruding between an inner and an outer larger cell, each bearing two antheridia; the outer externally convex, and followed by a similar external cell, also bearing two antheridia, while above it three antheridia follow in a vertical series, the uppermost subtended by the usual spinous process; all the antheridia relatively long, with long appressed necks directed obliquely upward in a coherent group. Stalk-cell of the perithecium well developed, hyaline, broader distally, its distal septum horizontal below the flattened group of basal cells; the body of the perithecium becoming more or less well distinguished into a broader somewhat inflated venter, a neck-portion subtended by a slight elevation, and a somewhat shorter tip; the whole usually straight, tapering gradually, and ending in a bluntly rounded apex subtended on either side by minute papillae. Perithecia $125-195 \times 30-40 \mu$ stalk-cell $40-60 \times 20-23 \mu$. Appendage proper, to tip of antheridia, $45-50 \mu$; its stalk-cell $15-20 \mu$. Total length to tip of perithecium $200-310 \mu$. Spores about $35 \times 4 \mu$.

On the abdomen and elytra of *Stilicis Ceylonensis* Kr., No. 2098, Peradeniya, Ceylon; No. 1826 (Types) Borneo.

This species belongs to the type separated under the name *Zeugandromyces* in my paper on Argentine Laboulbeniales. A comparison of abundant material in good condition leads me to believe, however, that the latter name should not be retained, and the Argentine species on *Scopaeus laevis* should be changed to *Stigmatomyces australis* nov. comb.

Cryptandromyces Javanus nov. sp.

Hyaline. Basal and subbasal cell of the receptacle somewhat obliquely and asymmetrically associated, subequal, nearly twice as long as broad. Stalk-cell of the appendage lying parallel to and closely united with the subbasal cell of the receptacle, the distal end of which is also in contact with it; the basal and subbasal cells of the appendage subequal; or the former larger, bearing distally two erect series of three or four antheridial cells separated by slightly oblique septa, at first somewhat coherent and evanescent after separation. Stalk-cell of the perithecium terminal in relation to the subbasal cell of the receptacle, its base of the same width and somewhat compressed or irregular, its distal end broader and obliquely related to the outer basal cell of the perithecium above, the basal cells of which are well

developed and clearly defined; the region somewhat narrower than the base of the venter from which it is well distinguished; the body of the perithecium rather short and stout, slightly and subsymmetrically inflated; the tip hardly distinguished, short, blunt-pointed, slightly asymmetrical. Perithecia $60-70 \times 23-25 \mu$, the stalk $20-40 \mu$. Appendage including stalk-cell $30-38 \mu$. Antheridial series about 28μ . Receptacle $35-40 \mu$. Total length to tip of perithecium $100-120 \mu$.

On a small mahogany brown scydmaenid, No. 1419: Java (Rouyer).

The antheridia in this species are somewhat more persistent than in the type, although they seem to disappear as soon as they have functioned. In the present instance two groups are present in at least one of the specimens, which seem to be coherent and when separated each series closely resembles the antheridial branchlet of the *Rhadinomyces*-type of the genus *Corethromyces*; although it seems doubtful that there is any close relationship between the two. The efferent necks are short or obsolete.

***Cryptandromyces subgaleatus* nov. sp.**

Hyaline. Basal and subbasal cells not differing greatly in size, somewhat variably related, the latter united to the stalk-cell of the appendage, which is similar. Appendage consisting of a rather long and slender axis curved toward the perithecium, near the base of which may arise an antheridial branchlet of three seriate antheridial cells; a similar branchlet sometimes terminating the main axis, or arising from the stalk-cell of the appendage. Stalk-cell of the appendage relatively long and slender, abruptly distinguished from the base of the perithecium, the cells of which are clearly defined and subequal; the region abruptly broader than the stalk-cell, and somewhat narrower than the venter above; which is slightly inflated, and tapers distally to the relatively very broad tip, which is of about the same diameter throughout; the apex slightly broader and subgaleate, slightly oblique inwardly, with a small projection. Perithecium $86 \times 20 \mu$, including basal cell region (10μ), the stalk-cell $25 \times 8 \mu$. Appendage to $215 \times 8 \mu$, the antheridial branchlet 30μ . Receptacle about $20 \times 10 \mu$. Total length to tip of perithecium 125μ .

On the elytra of a small beetle near *Scydmaenus*. No. 2145, Samarang, Java.

Only one of the four specimens examined is mature enough to have

produced spores. The species seems well distinguished by its broad subgaleate apex, slender and well developed perithecial stalk-cell, and its long appendage.

Corethromyces Medonis nov. sp.

Receptacle geniculate between the basal and subbasal cells, the former squarish or slightly broader than long, quite hyaline; the latter opaque, broader distally, sometimes twice as long as broad, indistinguishable from the main appendage with which it is continuous. The primary appendage hyaline along the inner margin, otherwise nearly opaque, the subdistal and much smaller distal cells giving rise to a group of hyaline branches which are rather short, once or twice branched, directed inward; some of the branchlets consisting of seriate antheridia of the normal type. Perithecium hyaline, becoming yellowish; the hyaline stalk-cell well developed, narrower below, the outline from its base to the apex of the perithecium almost symmetrically fusiform; body of the perithecium slightly inflated, the outline of the margins somewhat undulate; the tip not distinguished, often slightly bent outward, the apex bluntly rounded. Perithecium $78-100 \times 20-28 \mu$; the stalk-cell $20-39 \times 12-16 \mu$. Primary appendage $27-31 \times 9 \mu$, its longest branches 50μ . Total length to tip of perithecium $125-175 \mu$.

On the inferior abdomen of *Medon curtus* Kr.; No. 2074, Samarang, Java. On *Medon Birmanus* Fauv., No. 2368, Borneo.

A small species more nearly allied to *C. purpurascens* than to other described species, and belonging to the *Cryptobium*-inhabiting group.

Corethromyces decipiens nov. sp.

Receptacle becoming almost wholly opaque, a small hyaline point just above the foot, the basal cell small, geniculate, prolonged posteriorly and distally to form an opaque, free, somewhat divergent, spur-like upgrowth, spoon-shaped or of nearly equal diameter throughout, blunt-tipped; its base united throughout to the long flat distally hyaline otherwise deeply suffused subbasal cell; its remaining free portion lying beside the hyaline appendage, the branches of which reach some distance beyond its extremity. Appendage arising in the angle between the base of the perithecium and the black spur-like

process from the receptacle, quite hyaline; consisting of a basal cell and two or three smaller terminal cells from which a group of branches arises reaching to about the middle of the perithecium, once or twice branched, the lower branchlets antheridial, others sterile, rather slender, with curved or slightly recurved tips. Perithecium straight or rather strongly curved, rather slender and long, the stalk-cell about as large as the basal cell of the appendage beside it, the basal cells relatively large, the body somewhat crooked and ending in a snout-like tip, the apex broad, rounded, the outer lip-cell somewhat more prominent. Perithecia $75-100 \times 16 \mu$, the stalk-cell, $12 \times 8 \mu$. Receptacle including foot $25-30 \mu$, its spur-like process $35-40 \mu$. Appendage including branches $55-65 \mu$. Total length to tip of perithecium $120-150 \mu$.

On *Medon birmanus* Fauv., No. 2119, Borneo (Type) on bristles near tip of abdomen on upper side. On *M. ochraceus* Boisd., Borneo, No. 2369. On *M. curtus* Kr., No. 2087, Samarang, Java.

The specimens growing on hairs of the host are somewhat more slender and more strongly curved than those which grow on the body (No. 2369), and the spur-like process is more slender. The latter is similar to those which are developed on many of the species parasitic on *Stilici* to which the present form is most nearly allied.

Corethromyces Thinocharinus nov. sp.

Basal cell deeply suffused above and along its posterior margin, where the suffusion is continuous with that of the foot, above which it forms elsewhere a narrow hyaline contrasting arc, the cell extending upward and outward on the posterior side to form a free blackened variably developed spur-like somewhat divergent prolongation, its inner margin hyaline; sometimes rather short and straight, or longer and subsigmoid, extending beyond the longest branches of the appendage. Subbasal cell usually more or less suffused, translucent, small and angular, extending down beside the basal cell nearly to the foot, from which it is separated by the hyaline area of the former: the short stalk-cell of the perithecium rising from it distally and anteriorly; the appendage subterminally on the opposite side. Appendage hyaline, consisting of usually two or three larger superposed cells, from the upper of which arise several branches, some of their branchlets producing seriate antheridia. Perithecia relatively large, hyaline or faintly yellowish, the basal cells distinct and about as large as the

short stalk-cell; the main body nearly straight or slightly curved, sometimes subsigmoid, relatively rather long, tapering slightly; the tip rather broad, variably modified, often snout-like and irregularly bent, the posterior lip-cell usually prominent or forming a short but well defined concolorous projection; the apex flat or bluntly rounded. Perithecium $55-72 \times 12-13 \mu$. Appendage with branches $35-50 \mu$. Receptacle $9 \times 7 \mu$, the spine-like process $18-55 \times 3 \mu$. Total length to tip of perithecium $75-95 \mu$.

On the inferior surface of the abdomen, near the tip of *Thinocharis pygmaea* Kr. Samarang, Java, No. 2084.

This species corresponds closely to the numerous forms which comprise the section of the genus parasitic on *Stilici*. The basal cell is hardly distinguishable, from its small size and the suffusion which obscures it, while its relations are further confused from the displacement downward of the subbasal cell. It is most nearly related to *C. decipiens*.

Corethromyces orientalis nov. sp.

Basal cell of the receptacle relatively large, wholly blackened and not differentiated from the foot; continued upward to form a blackened prolongation, which is closely united to the subbasal cells of the receptacle and of the appendage, bending abruptly inward, being free and more slender above the latter; the free portion lying parallel to the appendage, the main axis of which it may equal in length, subbasal cell of the receptacle hyaline, its outer margin concave, below obliquely, or almost vertically, separated from the basal cell and its extension, as well as above from the stalk-cell of the perithecium which arises from it externally. Main axis of the appendage consisting of a basal cell which becomes displaced so that its base seems to lie against the blackened prolongation of the basal cell of the receptacle, the appendage thus becoming turned so as to lie across the stalk-cell of the perithecium, and of two to three smaller terminal cells all of which may bear one or more very elongate attenuated branches or branchlets, the whole quite hyaline. Perithecium and its stalk-cell hyaline, or the former faintly reddish purple, the whole subfalcate or even subsigmoid; the stalk-cell well developed, several times longer than broad, its diameter about the same throughout, as broad as or slightly broader than the base of the perithecium, which is usually strongly curved, hardly inflated below, tapering slightly and gradually distally; the tip not at all distinguished; the apex broad, bluntly

rounded. Perithecium $66 \times 16 \mu$, the stalk-cell $40-45 \times 13 \mu$. Primary appendage 25μ ; the longer branches $250-275 \mu$. Receptacle about 28μ , the free part of its prolongation $24 \times 4 \mu$. Total length to tip of perithecium $135-145 \mu$.

On the abdomen and prothorax of *Stilicus Ceylonensis* Kr. Buitenzorg, Thompson (Type) No. 2488; No. 2077, Samarang.

Allied to *C. Stilici* and differing especially in its appendage and receptacle.

***Corethromyces appendiculatus* nov. sp.**

Receptacle consisting of two very small cells, the basal hyaline, or but slightly suffused, the subbasal more or less deeply involved by a suffusion which is continuous with that of the main axis of the appendage. The latter dark blackish olivaceous, deeper externally, the dark septa clearly visible, the cells four or five in number, the three lower larger, the basal closely united to the stalk-cell of the perithecium, the subbasal often strongly convex, the distal bearing a terminal and one or two subterminal branches, the latter from the inner side; the branches sometimes sparingly branched, short, hyaline, except the basal cells of the terminal one which is a continuation of the main axis. Perithecia relatively short and stout, the stalk-cell but slightly larger than the basal cell of the appendage, to which it is almost wholly united; often separated from the perithecium which may diverge from it at an angle, crossing the axis of the appendage, by a distinct external constriction; the basal cell-region hyaline, not distinguished from the portion above it which becomes gradually broader and more deeply suffused with olive brown from below upward; the middle third broadest, the outer margin rather strongly convex; the tip short and broad, not at all distinguished, its inner margin deeply suffused, the suffusion extending upward into a rather slender curved appendage formed from an outgrowth of one of the lip-cells; another of the lip-cells prolonged to form a suffused projection about half as long, straight, with broad base and rounded tip, the other two lip-cells ending in dissimilar, small and unequal, asymmetrically placed hyaline protrusions. Perithecia $50-60 \times 16 \mu$; the stalk-cell $8-10 \times 5 \mu$; the free part of the longest terminal appendage about $6 \times 2 \mu$. Appendage, main axis $28-45 \times 7 \mu$, the hyaline branches about 28μ . Total length to tip of perithecium $70-85 \mu$. Receptacle $10 \times 5 \mu$.

On the elytra of a silphid beetle near *Anaspis*. No. 2079, Samarang, Java.

This peculiar species is most nearly allied to *C. obtusus* which it resembles in general habit and coloring. It is clearly distinguished by the peculiar conformation at the apex of its perithecium.

Stichomyces Pterogenii nov. sp.

Foot relatively large; receptacle subdecumbent, broadest at the base when seen sidewise; colorless or faintly yellowish, continuous with the primary appendage from which it is in no way distinguished, the whole consisting of about six superposed cells; the four lower somewhat larger, rather irregular in size, somewhat broader than long; the second, third and fourth giving rise laterally either to single perithecia, or to single short branches; the subbasal cell more often producing a short antheridial branch, and the cell above it an up-curved perithecium; the terminal cells of the axis giving rise on one or both sides to rather slender, elongate, tapering branches, which are simple or once branched near the base, turned upward parallel to the perithecium. Perithecium rather slender and long, borne laterally on a short stalk-cell which is bent abruptly upward; the venter somewhat broader, tapering slightly to the hardly differentiated tip, which is short, often slightly bent, tapering to a blunt point. Perithecia $40-50 \times 9-12 \mu$. Spores $18-20 \times 2 \mu$ in perithecium. Main axis $30-35 \times 10-12 \mu$ at base. Longest branches 175μ .

On the elytra of *Pterogenius Nietneri*; No. 2109, Peradeniya, Ceylon.

This rather nondescript form is somewhat doubtfully referred to the genus *Stichomyces*, of which it may be an aberrant and reduced type. The tendency to produce branches and perithecia on either side of the main axis, and the common occurrence of a branch below the perithecium from the subbasal cell would make it difficult to include it in *Corethromyces* which it resembles in some respects, nor does it seem possible to include it in the genus *Chaetomyces*, although the position of this last genus is somewhat uncertain. The perithecium, which is normally single, is more often produced by the third cell. The axis lies nearly parallel to the surface of the host, and the perithecium and long slender branches, at the bases of which short antheridial branchlets may arise, are abruptly bent upward.

Stichomyces Cybocephali nov. sp.

Very constantly coherent in pairs; straight, nearly colorless, the foot relatively very large, the axis consisting of from six to eight

superposed cells, which are broader than long and rather irregular in size; the two or three distal ones more often without branches. Perithecia or appendages arising from the second, third or fourth cells, laterally and sometimes from opposite sides even of the same cell. The branches scanty, often lacking or only one or two, curved upward, usually simple, few-celled, with a terminal antheridium. Perithecia suberect, or sometimes curved outward, borne on a short stalk-cell, concolorous, relatively long and slender, the body nearly symmetrical; the tip not clearly distinguished, except by a minute external papilla, short, tapering slightly to a blunt or truncate apex. Perithecium $30-35 \times 7-8 \mu$. Spores $25 \times 2 \mu$. Axis $20-27 \times 7 \mu$. Branches $15-18 \mu$. Foot $12 \times 5.5 \mu$.

On the elytra of *Cybocephalus* sp. No. 2106, Peradeniya, Ceylon.

This form like the preceding species is provisionally referred to *Stichomyces*, but is of uncertain position. What appear to be antheridia have been seen in several specimens borne singly and terminally, usually on the branch which subtends the perithecium.

Laboulbenia helicophora nov. sp.

Basal and subbasal cells of the receptacle uniform dirty yellow brown, the subbasal somewhat longer and broader; the distal portion swollen and becoming deeply suffused with blackish in the region near cell III which, like cell four, is relatively very broad, the two forming a prominent bulging in this region. Insertion-cell immediately over the septum between cells IV and V, separated from the perithecium by a portion of the upper surface of the latter; the group of appendages compact, more or less uniformly dull yellowish brown, the outer usually simple, rigid, slightly divergent, somewhat tapering, rather short; the basal cell of the inner bearing once furcate branches on either side similar to the outer appendage. Perithecium more than half free, broader at the base, and bent toward the appendages; although the inner margin is nearly straight up to the tip which, by a sudden constriction abruptly distinguishes the peculiar lip-cells, the inner of which forms an appendage deeply blackened, except along its inner side, which, projecting outward, curls upward and inward in a short helix; the outer lip-cell also forming a conspicuous black, slightly shorter, stouter appendage, its bluntly rounded tip slightly upturned; the pore hyaline and associated with a small black process from the base of the outer appendage, which curves over it. Perithe-

cia $175 \times 40-45 \mu$; the two lip-appendages spreading 64μ . Appendages, maximum length, 150μ . Receptacle $275-315 \times 78-85 \mu$. Total length to tip of perithecium $390-425 \mu$.

At the base of the anterior legs of *Pericallus* sp., No. 1408, Java (Rouyer).

A very striking species, most nearly allied to *L. Javana*, from which it differs in the general form of its receptacle, which recalls that of *L. Texana*, by its curled apical appendage, and much greater size, as well as in other points.

***Laboulbenia manubriolata* nov. sp.**

Variable, dirty straw-yellow throughout, or with brown shades; the subbasal, or both the basal and subbasal cells becoming suffused with blackish brown, in the type, and coarsely tuberculate. Basal portion of the receptacle rather slender, curved, the curvature including both the base of the subbasal cell and the whole basal cell, the latter one half to one third as long as the former; cells III and VI usually somewhat elongated, parallel, of about the same width; cell II longer, usually slightly prominent distally, separated by a horizontal septum from cell IV, which is often rather long and externally concave, bulging slightly below the insertion-cell. Appendages hyaline or becoming brownish, the basal cell of the outer relatively large and bearing a distal outcurved prolongation, the rest of the appendage once or twice branched; the branches somewhat tapering, rather slender, soon broken; basal cell of the inner appendage smaller producing a short branch on either side, usually furcate. Perithecium more than one half to one third free, becoming tinged with brownish, rather long and narrow, the tip relatively broad and slightly outcurved, blackened below the hyaline pore. Perithecia $80-135 \times 20-26 \mu$. Appendages unbroken, longest 150μ . Receptacle, to insertion-cell, $120-300 \times 30-40 \mu$. Total length to tip of perithecium $160-400 \mu$.

On various parts of a small Carabid allied to *Tachys*. No. 2081d (Type) on elytra, Samarang, Java. No. 2093, Peradeniya, Ceylon.

This species is most nearly allied to *L. Tachyis*, and *L. maritima* and is distinguished by the handle-like protrusion of the basal cell of the outer appendage. The species varies very greatly in size and color. The form having the basal and subbasal cells blackened and coarsely tuberculate, is taken as the type. The last mentioned character is evidently not a result of age, since it appears in a few very young specimens in which the perithecia have not begun to form.

Laboulbenia Grylli nov. sp.

Basal cell of the receptacle hyaline without a blackened foot, twice as long as broad, its base abruptly rounded and penetrating the host by a simple rhizoidal filament, the subbasal cell abruptly slightly broader above it, greatly elongated, hyaline, slightly broader distally, sometimes narrower in the mid-region, the terminal portion above it slightly and abruptly narrower; cells III-V yellowish, granular-punctate, cell II somewhat larger than the other two combined, cell V small, triangular, hardly reaching to cell III, and usually proliferous to form a small branched appendage similar to the branches of the main appendage. Main appendage arising from a single small basal cell seated on a well defined black insertion, its cells mostly rather short and stout, more or less constricted at the septa, the basal cell bearing two branches, erect, several times successively branched, the branchlets divergent often at almost a right angle; both the primary and secondary appendages hyaline or pale yellowish, bearing here and there a few short antheridia of the usual type. Basal cells of the perithecium small but clearly defined above cell VI, which extends downward in a point beside the end of cell II. Perithecium very large, almost wholly free, paler straw-colored, with a brownish tinge below; a symmetrically inflated venter clearly distinguished from a greatly elongated, but slightly tapering, nearly hyaline neck-portion, above which a long slender tip is abruptly distinguished, which is suffused with pale reddish brown, becoming blackened distally, except the tip of the outer lip-cell, which subtends the external pore. Perithecia $500-750 \times 100-120 \mu$; the tip $70-75 \times 18 \mu$; the neck 50μ at base and 32μ at distal end. Spores $45 \times 7 \mu$. Receptacle, basal cell about $160 \times 70 \mu$; the subbasal $550-780 \mu$ by 60μ ; $70-80 \mu$ at distal end. Total length to tip of perithecium $1300-1700 \mu$.

On the inferior surface of the abdomen, near the tip, of *Gryllus albifrons* Sauss. Samarang, Java.

This fine species is very conspicuous from its great size, being one of the largest of all the Laboulbeniales. It bears a very remote resemblance to *L. (Ceraimyces) Dahlii*, which also penetrates the host by means of a well defined rhizoid which, in the present species, appears to be always simple. Two infected hosts were sent me by Mr. Jacobson and abundant material has been examined. In every individual the cell-arrangement is exactly that of *Laboulbenia*, except that the main appendage arises from a single basal cell. This cell,

however, the basal wall of which is blackened in the usual fashion, should probably be regarded as the equivalent of the ordinary insertion-cell of other species, and always produces distally an inner and outer branch, which would thus be homologized with the inner and outer appendages of the usual type, such as is present in the very closely allied species described below. That this is also the condition in the type of *Ceraimyces*, (*C. Dahlii*), above referred to, seems also evident, and the peculiar black, bottle-shaped cell in this species, which bears terminally an inner and an outer branch, should be regarded as a modified insertion-cell. The secondary appendage, which arises from the proliferation of cell V, and may sometimes be partly lateral in position, corresponds exactly to the similarly developed appendage seen in *L. proliferans*.

***Laboulbenia subulata* nov. sp.**

Receptacle shorter than the perithecium, the basal cell somewhat shorter than the subbasal, curved and narrower below, rather abruptly enlarged just before penetrating the host by means of a usually simple rhizoid, which is abruptly bulbous just below the integument; the subbasal cell stout, broader distally, hyaline or pale straw colored, concolorous with the basal cell; cells III-IV small, nearly equal, separated externally by an indentation, deeper yellow, granular-punctate; cell V triangular, reaching to the apex of cell III. Insertion-cell normal, reddish brown, rather broad, giving rise to an outer and inner appendage in the normal fashion, the basal cells of which are similar; both appendages branching two or three times successively, hyaline, rather short; the ultimate branchlets tapering to blunt extremities; the cells not separated by conspicuous constrictions. Perithecium subulate, elongate, the venter relatively small with a more or less clearly defined narrower basal portion, slightly inflated, but hardly distinguished distally from the broad tapering neck-portion; the tip distinctly bent, not distinguished from the latter, except for the clearly visible terminations of the wall-cells, and a slightly purplish-brown suffusion, deeper at the apex, which is slightly asymmetrical, the inner lip-cells more prominent, with conspicuous round lip-valves, the pore lateral and external. Perithecia $500-700\ \mu$; the venter $120 \times 58\ \mu$; the tip $48 \times 20\ \mu$. Spores $28 \times 4\ \mu$. Receptacle $275-400 \times 58\ \mu$.

On the inferior surface of the abdomen of *Gryllus Burdigalensis-Cerisyi* Serv. Immature specimens of apparently the same species on *Gryllus mitratus* Burm.

Although numerous immature specimens of this form are available for examination, few mature individuals have been seen, and it is not improbable that the measurements will vary considerably from those given when abundant material is available. The type corresponds to that of *Laboulbenia* in every detail, and though closely allied to *L. Grylli* seems abundantly distinct.

Misgomyces ornatus nov. sp.

Relatively short and stout, pale amber-brown, the posterior margin more deeply suffused. Receptacle not distinguished from the primary appendage; the former consisting of four superposed cells, the basal longer and narrower, distally geniculate, the rest broader than long, the uppermost larger, five sided, bearing the stalk-cell of the perithecium on one side and continuous with the primary appendage on the other. Primary appendage consisting of normally three superposed cells, the basal larger and associated with a small cell which is separated from it on the inner side and lies between it and the stalk-cell of the perithecium to which it is firmly united; the two upper cells flattened, sub-hemispherical, bearing on the inner side branches more or less copiously branched to form a usually short dense tuft; the ultimate branchlets usually terminated by paired antheridia, which are relatively long, without well distinguished necks; the distal cell of the appendage also bearing at first a short outcurved evanescent appendage, continuous with the deeply suffused posterior marginal wall. Perithecia borne on a short, but well defined, stalk-cell; its basal cells clearly developed; the lowest, which lies at the right, much larger and somewhat broader than the portion of the base above it; the body rather short and stout, the outer margin straight, the inner convex, distally broad and abruptly distinguished from the tip, which is subtended on the inner side by a conspicuous short brown blunt tooth-like process; the pore minute and lateral on the inner side, a subterminal outer wall-cell assuming a terminal position and extending upward and outward to form a blunt-tipped somewhat divergent concolorous appendage, which becomes relatively long and slightly sigmoid. Perithecia, including base, without terminal appendage, $80-90 \times 23-30 \mu$; its terminal appendage $25-75 \times 4.5 \mu$; the stalk cell $14 \times 11 \mu$. Spores $35-40 \times 2.5 \mu$. Total length to tip of primary appendage $65 \times 25 \mu$, the tuft of branches $35-45 \mu$. Antheridia $32 \times 2 \mu$.

Near the middle of the outer margin of the right elytron of a small carabid allied to *Tachys*. Peradeniya, Ceylon, No. 2093f: Samarang, Java, No. 2081f.

This species is referred to *Misgomyces* not without hesitation, since its receptacle and perithecium appear to be generally determinate. Although its perithecium is very peculiarly modified, and quite unlike that of any species of *Misgomyces* known at present, its receptacle and appendage correspond sufficiently well to justify this provisional reference. The same form is known from Borneo and the Philippines and is always found growing appressed in the position above indicated. The apex of the perithecium with its peculiar appendage, which varies considerably in length according to the age of the individual, suggests a pointed monk's hood.

***Misgomyces Lispini* nov. sp.**

Wholly hyaline, usually straight and erect. Receptacle indeterminate, becoming broader distally; consisting normally of a series of about ten to fifteen cells, much flattened, except the subtriangular basal cell; the uppermost bearing the perithecium on one side and the primary appendage portion on the other; the latter consisting of two, or usually three superposed cells closely united to the base of the perithecium, the two upper, or only the uppermost, separated from it by a long narrow marginal cell which extends nearly to its tip, and appears to be originally derived from the lowest member of the series; the terminal cell bearing one, rarely two 'appendages' from its nearly horizontal or outwardly oblique upper surface, usually distinguished by a constricted dark septum, and often more or less copiously branched. Perithecium, including the marginal cell which assumes the position of its inner wall, often nearly symmetrical, four fifths to two thirds free on its inner side, subconical, tapering rather rapidly and evenly from a broad base to a small truncate apex, the tip but slightly distinguished and only on the inner side just above the marginal cell. Perithecia $58-62 \times 26-32 \mu$. Total length to tip of primary appendage portion $78-105 \times 27-43 \mu$. The branched appendage $50-75 \mu$. Total length to tip of perithecium $110-140 \mu$.

On various parts of *Lispinus impressicollis* Motsch., No. 2076, Samarang, Java. No. 2101, Peradeniya, Ceylon. Also known from Borneo.

This species occurs usually in small numbers on its host and varies

from a very stout to a somewhat slender form. The antheridia are sometimes produced in considerable numbers, especially when the perithecium has been destroyed or has failed to develop. In such cases they arise in tufts, and are usually paired at the ends of branchlets as in *M. ornatus*, and as in this instance, are relatively long, without a clearly defined neck-portion.

Misgomyces Clivinae nov. sp.

Long and slender, nearly hyaline, or faintly tinged with brownish yellow. Receptacle consisting of about ten superposed cells, the basal considerably elongated, the next two or three above it squarish, the remainder more elongate, all filled with coarse evenly granular protoplasm. The axis of the perithecium coincident with that of the receptacle, the primary appendage-portion erect, mostly free, consisting of two or three superposed cells somewhat elongated, the basal one connected with the perithecium by a small cell which is closely united to it, the terminal one bearing several evanescent branchlets. Perithecium straight, symmetrical, slightly inflated, the tip tapering to the blunt symmetrical apex. Perithecia $112 \times 42 \mu$. Total length to tip of perithecium 580μ . Greatest width of receptacle 32μ . Primary appendage portion $70 \times 12 \mu$.

On the margin of the elytra of *Clivina* sp., No. 1415, Java (Rouyer).

Six specimens of this species have been examined of which three, only, are matured. In all of these, the branches of the main appendage have disappeared. The species is, however, very clearly distinguished by its long and slender habit, and could not be confused with any known form.

Rhachomyces orientalis nov. sp.

Receptacle determinate, consisting of four superposed cells, followed by two cells more or less obliquely associated side by side; the basal cell narrow, rather short, distally broader and suffused with blackish brown: the second, subbasal, more deeply suffused, broader than long, subtriangular, distally pointed or obliquely separated from the third cell, and bearing a single simple straight appressed short usually four-celled primary appendage; the basal cell of which is broader, deeply suffused and distinguished above by a broad black slightly

constricted septum, the rest externally blackened, their septa somewhat oblique: the third cell obliquely separated from the fourth, hyaline or with a basal blackish suffusion, much larger, bearing just above the base of the primary appendage a large blackened obliquely separated cell, the inner face of which is almost wholly in contact with the fourth cell of the receptacle, and which bears distally two rigid erect appressed branches, one of which is usually longer, often reaching nearly to the tip of the perithecium; while the other is much shorter, and bears a terminal antheridium; the basal cells of both nearly opaque, the rest deeply suffused externally, hyaline along the inner margin, the septa oblique: the fourth cell similar to the third, somewhat larger, distally pointed and obliquely separated from two cells lying right and left immediately above it; one of which is deeply suffused and gives rise distally on its inner side to the short almost wholly inclosed stalk-cell of the perithecium, and externally to a small subhyaline cell from which arise two appendages similar to that borne by the third cell, each of which is characterized by a deeply suffused basal cell bearing paired erect stiff branches; the second of the two paired cells above cell four, bearing a simple short appendage with a blackened base which usually terminates in an antheridium, and also bears laterally a secondary appendage similar to that arising from cell III, its basal cell deeply suffused and bearing two erect branches. Perithecium only partly surrounded by the branches of the appendages, which may extend nearly to its tip; uniform pale straw-colored, subsessile, erect, straight on one side, and somewhat convex on the other, the tip more or less clearly distinguished, usually slightly bent, broad, short, the apex truncate, often oblique and slightly sulcate. Perithecium $100-116 \times 25 \mu$. Receptacle $60-80 \times 22 \mu$. Longer appendages 110μ . Total length to tip of perithecium $160-200 \mu$.

On the trochanters of a small Carabid near *Tachys*, No. 2081, Samarang, Java.

I have taken as the type of this species a stouter, darker, more compact form which inhabits the trochanter of this host and has also been received from the Philippines. An immature specimen which seems to be the same is also among the Ceylon material. In addition to this type-form, one occurs on the elytra in both the Javan and Philippine material, which is somewhat more elongate, the receptacle and the subtending cells of the appendages nearly hyaline, and the perithecium furnished with a short tooth like projection near the middle, which has not been noticed in any of the specimens inhabiting the trochanter. Still another variety has been obtained from Borneo

and the Philippines, in which the base and neck cell of the perithecium are greatly elongated, the perithecium angular, and the pale receptacle longer. The cell-arrangement in all these forms seems, however, to be identical; although that last mentioned is slightly twisted so that the appendages do not at first appear to arise in the same order, that is three sets superposed on one side and one placed at the base of the perithecium on the other. Although quite different in general appearance I am of opinion that they should not be separated specifically.

